

Geotechnical Data Report

SR 395 North Spokane Corridor Section 3 Spokane, Washington

May 23, 2001

Prepared for

Washington State Department of Transportation

Prepared by



LANDAU ASSOCIATES, INC.

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1-1
2.0	PROJECT DESCRIPTION	2-1
3.0	GEOLOGIC SETTING	3-1
	3.1 SURFACE AND TOPOGRAPHIC CONDITIONS	3-1
	3.2 REGIONAL GEOLOGY	3-2
	3.2.1 Pre-Tertiary Metamorphic and Igneous Rocks	3-2
	3.2.2 Tertiary Volcanic and Sedimentary Rocks	3-2
	3.2.3 Pleistocene and Holocene Geology	3-3
	3.3 PROJECT GEOLOGY	3-5
	3.3.1 Cretaceous Granitic Rocks (Tkai)	3-5
	3.3.2 Grande Ronde Basalt (Mv)	3-6
	3.3.3 Latah Formation (Mc)	3-7
	3.3.4 Wanapum Basalt (Mv)	3-8
	3.3.5 Pleistocene Flood Deposits (Qf)	3-9
	3.3.6 Eolian Deposits (Qes and Ql)	3-9
	3.3.7 Surficial Mass Wasting Deposits (Qmw)	3-9
	3.3.8 Alluvium (Qa)	3-10
	3.4 GROUNDWATER	3-10
4.0	USE OF THIS REPORT	4-1
5.0	REFERENCES	5-1
APP	ENDICES	
	Appendix A Field Explorations	
	Appendix B Laboratory Testing	

LIST OF FIGURES

Figure	Title
1	Vicinity Map
2	Site and Exploration Plan

1.0 INTRODUCTION

This geotechnical data report summarizes the field investigation and geotechnical laboratory testing completed in support of the Washington State Department of Transportation (WSDOT) SR 395 North Spokane Corridor – Section 3 project. The purpose of this investigation was to obtain subsurface information to characterize soil, rock, and groundwater conditions along the proposed Section 3 alignment.

The project location is shown on the Vicinity Map, Figure 1. The Site and Exploration Plan, Figure 2, shows the project area and location of the borings drilled for this investigation. A description of the field exploration program, the boring logs summarizing subsurface conditions, and a table summarizing pertinent information regarding each boring, are included in Appendix A of this data report. A description of the laboratory testing program along with the results of the laboratory testing are included in Appendix B of this data report.

Landau Associates was contracted by the Washington State Department of Transportation to provide geotechnical services to support the project. Our services were provided in accordance with on-call geotechnical services Agreement No. Y-7373 between the Washington State Department of Transportation and Landau Associates, Inc., and Task AC, Work Order XL-0715, and our July 31, 2000, Scope and Estimated Cost letter.

Our scope of services included the following specific tasks:

- Logged 26 borings drilled to depths of approximately 21.5 to 308 ft below the existing ground surface to characterize soil, rock, and groundwater conditions.
- Monitored the installation of piezometers in 25 of the 26 borings for subsequent measurement of groundwater levels.
- Prepared and submitted this data report summarizing the field exploration and laboratory testing program, and regional and project site geology.

2.0 PROJECT DESCRIPTION

As shown on the Vicinity Map, Figure 1, the proposed SR 395 North Spokane Corridor Project is planned to connect Interstate 90 (I-90) with US Highway 2 (US 2) and rejoin State Route 395 (SR 395) at the Little Spokane River. As currently proposed, the corridor will extend north from I-90, west of Freya Street, and parallel Market Street until Francis Avenue. In the vicinity of Francis Avenue, the alignment jogs northeast about ¼ mile, and then continues northward. The proposed alignment crosses Market Street north of the junction of Market Street and Hawthorne Road, and then turns northwest and intersects US 2 at Shady Slope Road. North of Shady Slope Road, the alignment turns westward and ties into SR 395 just south of the Little Spokane River Bridge at SR 395.

The Section 3 project extends from Lincoln Road to Market Street. Elevated crossings with approach embankments are planned for Lincoln Road and Gerlach Road. As currently envisioned, cuts of up to about 120 ft are anticipated between Gerlach Road and Fairview Road. Fills of up to about 50 ft are proposed between Lincoln Road and Gerlach Road, and up to about 80 ft north of Fairview Road.

3.0 GEOLOGIC SETTING

The following sections provide a description of the existing surface conditions and topographic setting, regional geology of the project area, and a description of the various geologic units encountered in the explorations along with a summary of the distribution of the various geologic units encountered in the project area.

3.1 SURFACE AND TOPOGRAPHIC CONDITIONS

The general project area lies within the northern portion of the Spokane Valley, north of the northern city limit of Spokane. The surface topography within the Section 3 area varies from gently rolling between Lincoln Road and about station 302+00, hilly between about station 302+00 to station 370+00, and rolling to gently rolling between about station 370+00 and the north end of the Section 3 alignment at Market Street. Total topographic relief along the alignment is about 300 ft, with the maximum elevation of about 2240 ft occurring near station 330+00 and the minimum elevation of about 1940 ft occurring near station 375+00.

The proposed Section 3 route is predominately undeveloped, and surface vegetation varies from nearly bare ground to sparse grassland. The route crosses two major power transmission corridors: one north of Lincoln Road, and the second near Gerlach Road; and two major pipeline corridors north of Gerlach Road.

In the south portion of Section 3 (Lincoln Road to about station 302+00) and in the north portion of Section 3 (about station 370+00 to Market Street), the surficial soil was observed to generally consist of well-graded sand, poorly-graded sand, and silty sand. Slopes in these two areas are generally less than 15 percent. Therefore, given the exposed soil types and the typical slope gradients, the erosion potential would be considered low to moderate for wind and/or water erosion in the north and south portion of the Section 3 route. In the central portion of Section 3, between about 302+00 to 370+00, surficial soil types were observed to generally consist of silt and sandy silt (loess), silt with sand, silty sand, and poorly-graded sand. Scattered areas of cobble and gravel-rich soil were also present. Slopes in the central hilly portion of Section 3 are generally steeper than 15 percent, ranging up to nearly 70 percent, locally. Therefore, given the exposed soil types and the typical slope gradients in the central portion of Section 3, the potential for wind and/or water erosion would be considered moderate to severe on the less steeper slopes to very severe on the steeper slopes.

Localized areas of steep slopes (slopes with gradients of 40 percent or more) exist along the Section 3 route, generally between about stations 302+00 and 370+00. The steep slopes form the southwest facing margin of Orchard Prairie. The steep slopes along the southwest edge of Orchard

LANDAU ASSOCIATES

Prairie were likely formed by scour during Pleistocene flood events (which are discussed in greater detail in Section 3.2.3 of this report). These slopes have been further incised by drainages originating on Orchard Prairie. These slopes were generally vegetated and appear to be relatively stable at this time, under the existing climatic conditions. In a wetter environment, the slopes would likely be potentially unstable.

3.2 REGIONAL GEOLOGY

Bedrock and sedimentary units in the general project area include, from oldest to youngest: metamorphic and igneous rocks, the Latah Formation and Columbia River Basalt Group, Lake Missoula catastrophic flood deposits, and eolian deposits, which are described in the following paragraphs.

3.2.1 PRE-TERTIARY METAMORPHIC AND IGNEOUS ROCKS

The Spokane area is underlain by high-grade metamorphic rocks of the Spokane dome of the Priest River metamorphic core complex. The core rocks have been intruded by Cretaceous and early Tertiary granitic rocks (Boleneus and Derkey 1996). These rocks were deeply eroded, leaving a surface of considerable relief.

These rocks formed a generally northwest-trending mountain range with drainages extending into the lowlands to the south. Limited exposures of the Priest River metamorphic complex have been mapped along the base of the hillside in the vicinity of Lincoln Road and Saint Michael Road (Joseph 1990). Exposures of the granitic rocks have been mapped southeast of the intersection of Market Street and Stoneman Road (Derkey 1997), along the base of the hillside in the vicinity of Fairview Road (Kiver, Rigby, and Stradling 1979), and along the west side of SR 395, south of the Little Spokane River Bridge (Derkey, Gerstel and Logan 1998).

3.2.2 TERTIARY VOLCANIC AND SEDIMENTARY ROCKS

During the Miocene Epoch (late Tertiary), between 5 and 24 million years ago, extensive flows of basaltic lava flooded the region, covering the lower valleys and foothills and abutting the higher mountains. The basalt flows covered more than 100,000 square miles in parts of Washington, Idaho, and Oregon. The basalt flows are generally thought to have entered the Spokane area from the south and southwest, probably erupting from vents in the area of the Chief Joseph dike swarm in the southeast corner of Washington (Robinson 1991). In the project area, the individual flows are generally flat-lying and have thicknesses of 50 to 150 ft (Griggs 1973). Two formations of the Columbia River Basalt Group have been mapped in the area: the Wanapum Basalt (Priest Rapid Member) and the Grande Ronde Basalt

LANDAU ASSOCIATES

(Derkey 1997; Derkey, Gerstel, and Logan 1998). The Grande Ronde Basalt is between 15.6 and 16.4 million years old, and is generally designated as "valley" flows due mainly to exposures in valleys around the Spokane area. The Wanapum Basalt is between 14 and 15 million years old and is generally designated as "rim rock" flows mainly because it caps the bluffs in the project area. The basal contact of the Wanapum Basalt is typically about elevation 2,200 ft in the project area (Derkey 1997).

The earlier basalt flows likely blocked stream/river drainages, possibly including those of the ancestral Spokane and Columbia River, forming either a series of lakes (or possibly a single large basin as argued by Robinson [Robinson 1991] based on stratigraphic correlations) along the north and east rim of the basalt field. The basin is generally thought to be arcuate in shape, extending from near Grand Coulee, Washington, to Moscow, Idaho. Lacustrine sediments, derived from erosion of the older basalts and the pre-Tertiary rocks in the region, were deposited in the basin. These sediments, consisting of primarily silt and clay, with minor sand and gravel, form the Latah Formation. The Latah Formation is generally described as poorly indurated siltstone, claystone, sandstone, and minor conglomerate, containing scattered volcanic ash layers. Little data is available regarding the general depositional nature of the Latah Formation, but sediment was likely deposited by drainages flowing into the basin from the east and north. The Latah Formation generally exhibits an "upward coarsening" sequence, which is typical of lake-type depositional environments.

The Latah Formation discontinuously outcrops along the north and east rims of the basalt field. Outcrops have been mapped as far west as Grand Coulee and near Kellers Ferry, Washington, and encountered in deep wells at Davenport and Odessa, Washington (Robinson 1991). The Latah Formation is exposed along I-90 in the Coeur d'Alene area (ITD 2000) and is intermittently present as far south as Moscow, Idaho (Robinson 1991).

In the general project area, the Latah Formation is estimated to be more than 1,000 ft thick in places (Derkey 1997). Where exposed in the Spokane region, the Latah Formation generally overlies the Grande Ronde Basalt and underlies the Wanapum Basalt. Within the project area, the Latah Formation is overlain by Wanapum Basalt and is exposed on the hillsides east of Market Street at the south end of Section 1 and the northern end of Section 3, and in limited exposures on the hillsides northwest of US 2.

3.2.3 PLEISTOCENE AND HOLOCENE GEOLOGY

During the Pleistocene Epoch (early Quaternary), 10,000 to 2 million years ago, vast continental ice sheets advanced into the Spokane valley. Evidence indicates that there were at least four to possibly six advances of the continental ice into the region during the Pleistocene (Molenaar 1988). The latest advance, which occurred between about 12,000 and 22,000 years ago, had the greatest effect on the present-day landscape. Two lobes of ice advanced into the area: the Pend Oreille lobe, which is thought LANDAU ASSOCIATES

to have advanced west down the present day Spokane River Valley to as far as the eastern city limits (Weis and Richmond 1965); and the Little Spokane lobe which is thought to have advanced southward to near Milan (Weis and Richmond 1965), about 15 miles north of the project area. Melt water deposits, chiefly of sand and gravel with silt and clay, were deposited in and along the valleys of the Little Spokane and Spokane Rivers. In addition, a proglacial lake, known as Lake Columbia, occupied much of the Spokane Valley during the Pleistocene. Remnants of the lake sediments exist in tributary valleys such as the Peone Prairie north of Spokane (east of the project area). The glacial lake deposits consist predominantly of sand, silt, and clay with scattered drop stones.

Glacial ice of the Purcell lobe is thought to have periodically blocked the Clark Fork River near the present day Idaho/Montana border, forming a great ice dam across the valley. Melt water from other ice lobes further up the Clark Fork River drainage became impounded behind the ice dam, forming a vast lake in present day western Montana referred to as Glacial Lake Missoula. At its highest level, the lake covered an estimated 3,000 square miles and contained an estimated 500 cubic miles of water (Molenaar 1988). Periodically the ice dam failed, releasing an enormous volume of water that flowed across the landscape. It has been speculated that the entire lake may have drained within a few days, resulting in a peak flow across the Columbia Plateau at 750 million cubic feet a second (Molenaar 1988). The majority of this flood water rushed through the Spokane River and Little Spokane River valleys en route to the Columbia River.

Flood waters inundated the Spokane area to a maximum elevation of 2,700 ft (Derkey 1997). Though the number of Pleistocene flood events are unknown, each flood event likely swept down the Spokane and Little Spokane River valleys scouring deposits of the previous flood events, cutting new channels into the pre-Pleistocene bedrock, and leaving behind new deposits of boulders, cobbles, gravel, and sand. In less energetic environments, slack water deposits of chiefly sand and lacustrine sediments were laid down. The maximum thickness of the flood deposits in the Little Spokane River Valley is on the order of 500 ft (Derkey 1997).

Surficial deposits of wind-blown (eolian) sand (Holocene [present to 10,000 years ago] and Pleistocene Epoch) overlie the flood deposits over a good portion of the project area. The wind-blown sand has been mapped in the project area as a generally northeast trending band originating near the southern end of Five Mile Prairie and extending northward to the vicinity of Deadman Creek (Kiver, Rigby, and Stradling 1979, and Joseph 1990). The deposit is generally bounded on the east by the southwestern margins of Orchard and Peone Prairies, and generally on the west by US 2. The wind-blown deposits are derived primarily from Pleistocene flood deposits that mantle much of the general project area. Surficial deposits of loess (eolian silt and fine sand) have also been mapped in the eastern

portion of the project area, mainly in the upland area of Orchard Prairie (Kiver, Rigby, and Stradling 1979, and Joseph 1990).

Mass wasting (landslide) deposits are present along the bluff slopes that comprise the margins of the Orchard and Peone Prairies and other upland areas in the vicinity. In the general project vicinity, mass wasting deposits vary from predominantly deep-seated, large, composite landslides to debris flow and rockfall (talus) deposits. The deposits are often characterized by irregular and hummocky topography. Mass wasting deposits generally consist of a heterogeneous mixture of basalt, Latah Formation, and Pleistocene flood deposits and are generally of Pleistocene age. Extensive mass wasting deposits form the north-facing slope along the south margin of Peone Prairie (Derkey 1997). Mass wasting deposits on the southeast facing slope of Orchard Prairie generally consist of surficial deposits of talus intermixed with weathered Latah Formation or completely weathered/altered granitic rocks.

3.3 PROJECT GEOLOGY

Based on conditions encountered in the borings completed along Section 3, the general geology along Section 3 can be divided into three sections: 1) Lincoln Road to about Station 302+00; 2) Station 302+00 to 343+00; and 3) 343+00 to Market Street. In general, Pleistocene flood deposits overlying Cretaceous granitic rocks are present south of about station 302+00. In the central hilly portion, which is higher in elevation (about station 302+00 to about 343+00), the stratigraphic sequence generally consists of Latah Formation, basalt, and Cretaceous granitic rocks. To the east of the alignment, above about elevation 2300 ft, the Latah Formation is overlain by basalt. North of about station 343+00, where the topography begins to decline to the north, surficial mass wasting deposits of talus and colluvium and eolian deposits overlie Cretaceous granitic rocks.

Geologic units encountered in the Section 3 alignment, from oldest to youngest, are Cretaceous' granitic rocks (Tkia), Grande Ronde basalt (Mv), Latah Formation (Mc), Wanapum basalt (Mv), Pleistocene flood deposits (Qf), eolian deposits (Qes and Ql), surficial mass wasting deposits (talus/colluvium) (Qmw), alluvium (Qa), and human-placed fill. The following provides a generalized description of each unit encountered in the project area.

3.3.1 Cretaceous Granitic Rocks (Tkai)

Granitic rocks were encountered in the boring PH3-1-00 at about elevation 1906 ft, in PH3-9-00 at about elevation 2042 ft, in PH3-11-01 at about elevation 2131 ft, in PH3-12-00 at about elevation 2055 ft, in PH3-13-01 at about elevation 2005 ft, in DP-10-00 at about elevation 1905 ft, in PH3-14-00 at about elevation 1950 ft, in PH3-15-00 at about elevation 1909 ft, in DP-11-01 at about elevation 1989 ft, and in

BPA-1-01 at about elevation 1885 ft. Where encountered, the granitic rocks extended to the depth explored in the borings. The granitic rocks were observed to be medium-grained and vary from completely weathered/altered (soil-like) to fresh rock. The rock strength was observed to generally be very weak (R1), with less weathered/altered zones having rock strengths of up to moderately strong (R3). Color is highly variable ranging from pale green, grayish-green, greenish gray, yellowish red, and dusky yellow in weathered/altered zones to light gray, dark gray and light red in less weathered/fresh zones. Discontinuities are generally closely to widely spaced and generally in poor condition.

3.3.2 GRANDE RONDE BASALT (Mv)

Grande Ronde Basalt was encountered beneath the Latah Formation in boring PH3-4-00 at about elevation 2035 ft, in GER-1-00 at about 2048 ft, in PH3-5-00 at about elevation 2053 ft, in PH3-6A-00 at about elevation 2051 ft, in PH3-6B-00 at about elevation 2063 ft, in PH3-7-00 at about elevation 2062 ft, in PH3-8A-00 at about elevation 2069 ft, in PH3-8C-01 at about elevation 2050 ft, and in PH3-9-00 at about elevation 2069 ft. The contact between the Grande Ronde basalt and the overlying Latah Formation appears relatively flat lying. The basalt is not present north of about station 380+00 and south of about 316+00. The Grande Ronde basalt extended to the depth explored in borings PH3-4-01, GER-1-00, PH3-5-00, PH3-6A-00, PH3-6B-00, PH3-7-00, PH3-8A-00, and PH3-8C-01. At boring PH3-9-00, Cretaceous granitic rocks were encountered beneath the basalt at elevation 2042 ft.

The basalt generally consists of dark gray, fine-grained, fresh to slightly weathered, strong rock (R4). Discontinuities are generally closely to very closely spaced, though occasionally widely to very widely spaced, and in good to excellent condition. Fracture frequency is generally 0 to 3 fractures per foot (FPF), but occasionally as high as 7 to 10 FPF.

A zone of weathered basalt was encountered in boring PH3-5-00 between about elevation 2053 to 2051 ft and in PH3-8A-00 between about elevation 2067 to 2063 ft. The weathered basalt is yellow in color, fine-grained, highly weathered, very weak rock (R1). Discontinuities are closely to very closely spaced and in very poor condition. Fracture frequency is 11 to greater than 12 FPF.

A brecciated basalt zone was encounter in boring PH3-5-00 between about elevation 2051 and 2041 ft, and in PH3-6B-00 between about elevation 2057 to 2052 ft. The brecciated basalt is medium dark gray to dark gray and yellowish orange in color, fine-grained, slightly weathered, very weak rock (R1). Discontinuities are closely to very closely spaced, and in very poor condition. Discontinuities are infilled with clay in boring PH3-5-00 and PH3-6B-00. Vertical slickensides with horizontal striations were observed within the clay infilling in boring PH3-6B-00 at a depth of about 189 ft. Fracture frequency in the brecciated zone is 2 to 7 FPF.

3.3.3 LATAH FORMATION (Mc)

Latah Formation was encountered near or at the surface in borings PH3-2-00, PH3-3-00, PH3-4-01, GER-1-00, PH3-5-00, PH3-6A-00, PH3-6B-00, PH3-7-00, PH3-8A-00, PH3-8B-00, PH3-8C-01, PH3-9-00, PH3-10A-00, and PH3-10B-00. In general, the Latah Formation was observed in the borings to consist of interbedded siltstone, friable sandstone, and claystone. The upper portion of the Latah Formation is generally weathered to a soil-like consistency and consists of interbedded stiff to very stiff fat clay, very stiff to hard silt, and medium dense to dense, well-graded sand. The zone of weathering is highly variable in thickness.

Siltstone portions were observed in the borings to generally consists of dark gray, dusky yellow, dusky yellowish brown, light gray, grayish brown, and dark brown in color; slightly weathered, finegrained, very weak rock (R1), with closely spaced discontinuities along partings at 0 to 3 degrees to the horizontal. Discontinuities are in very poor to poor condition. The fracture frequency is variable, ranging from 0 to 12 FPF.

Claystone was observed to be dark gray and dark brown in color; slightly weathered, finegrained, very weak rock (R1), with closely spaced discontinuities along partings at 0 to 3 degrees to the horizontal, in very poor to poor condition. The fracture frequency is variable ranging from about 2 to 11 FPF.

Sandstone encountered in boring PH3-8C-01 was observed to be light gray and pale yellow in color; slightly weathered, fine-grained, very weak rock (R1), with widely spaced discontinuities occasionally along partings at 0 to 3 degrees to the horizontal. The discontinuities are in poor to good condition. The fracture frequency is generally 0 FPF.

Several zones of disturbed bedding, slickensides, and shear zones were observed within the Latah Formation in several of the borings. In boring PH3-5-00, disturbed bedding and organics were observed in rock core recovered between about 54 and 56 ft. In boring PH3-6A-00, slickensides and disturbed bedding were observed in rock core recovered between depths of about 145 to 150 ft and 170 to 186 ft. In boring PH3-7-00, slickensides were observed in rock core recovered between depths of about 51 to 67 ft, 92 to 96 ft, 106 to 111 ft, 141 to 146 ft, and 176 to 181 ft. Between a depth of about 81 to 83 ft, the siltstone was observed to have a brittle/diced texture, possibly indicative of an old shear zone. In boring PH3-8A-00, slickensided fractures were observed in rock core at a depth of about 91 ft, and slickensided clay gouge was observed in rock core recovered from a depth of about 104 ft. An old slide plane with clay gouge and soft zones was observed in rock core recovered between a depth of about 105 to 112 ft. In boring PH3-8C-01, slickensides were observed in rock core recovered between depths of about 222 to 235 ft and 279 to 295 ft. In boring PH3-9-00, slickensides were observed in rock core recovered between depths of about 54 to 62 ft, 68 to 88 ft, 113 to 125 ft, and 140 to 165 ft. A slide zone with bedding rotated

5/23/01 I:\PROJECT\244\006\Section3_Data_report.doc

LANDAU ASSOCIATES

about 15 degrees to the horizontal, along with clay gouge and soft zones, was observed in rock core recovered between a depth of about 98 and 102 ft. In boring PH3-10B-00, slickensides were observed in rock core recovered between depths of about 23 to 36 ft and 56 to 76 ft.

The presence of disturbed and rotated bedding, slickensides, and shear zones indicates past deformation within the Latah Formation. This deformation may be a result of deep seated landsliding occurring during catastrophic flooding in the Pleistocene Epoch. To the northeast, mass wasting deposits have been mapped along the margins of the Peone Prairie. Though these deposits are also thought to be a result of large, rotational-type landsliding, the composition of these deposits differ from conditions observed in the borings completed along the Section 3 alignment. The mass wasting deposits along the margins of the Peone Prairie are typically characterized by heterogeneous, broken deposits of Latah Formation; lesser amounts of Wanapum Basalt; and catastrophic flood deposits (Derkey 1997). Basalt clasts within the mass wasting deposits can range from as large as 25 ft to gravel and pebble size (Derkey The surface expression of mass wasting deposits along the margins of the Peone Prairie is 1997). typically hummocky. The surface expression along the southeast-facing hillside in the Section 3 alignment was observed to be gently undulating as opposed to hummocky. In addition, heterogeneous, broken deposits of Latah Formation intermixed with Wanapum Basalt and catastrophic flood deposits were not observed either in the borings or at the surface in the vicinity of the borings. It may be that mass wasting deposits were once present along the hillside, but were scoured away as a result of the catastrophic Pleistocene floods, leaving behind more coherent deposits of the Latah Formation.

The Latah Formation extended to the depth explored in borings PH3-2-00, PH3-3-00, PH3-8B-00, PH3-10A-00, and PH3-10B-00. Grande Ronde basalt underlies the Latah Formation at borings PH3-4-01, GER-1-00, PH3-5-00, PH3-6A-00, PH3-6B-00, PH3-7-00, PH3-8A-00, PH3-8C-01, and PH3-9-00.

3.3.4 WANAPUM BASALT (Mv)

The Wanapum basalt was encountered in boring PH3-8C-01 and is generally dark gray and dark gray streaked brown, fine-grained, moderately weathered becoming slightly weathered with depth, moderately strong rock (R3). Discontinuities are very closely to closely spaced and in poor condition. Fracture frequency varies from 10 to about 6 FPF near the base of the unit. The basalt was observed to be slightly vesicular in the upper 10 ft. The basalt extends to about elevation 2,300 ft in boring PH3-8C-01 and is underlain by the Latah Formation.

3.3.5 PLEISTOCENE FLOOD DEPOSITS (Qf)

Pleistocene flood deposits were encountered at the surface in borings LINC-1-00, PH3-1-00, DP-8-00, and DP-9-00. The flood deposits were observed to consist of loose to very dense, well-graded and poorly-graded, fine to medium and fine to coarse sand, and silt with sand (DP-9-00). Trace gravel is present in the flood deposits at boring DP-9-00. The sand was typically grayish-brown in color with subrounded to subangular grains. These deposits are consistent with a lower energy environment and were likely deposited as the flood waters receded. The Pleistocene flood deposits extend to the depth explored in borings LINC-1-00 (51.5 ft), DP-8-00 (21.5 ft), and DP-9-00 (21.5 ft).

In boring PH3-1-00, a boulder/cobble zone was encountered beneath the finer-grained flood deposits between a depth of about 63 and 76 ft. The boulder/cobble zone likely represents a higher energy deposit laid down during Pleistocene flood events. The boulder/cobble zone is underlain by very stiff, fat clay between a depth of 76 and 78.5 ft. The Pleistocene flood deposits extend to the depth explored in the borings, with the exception of PH3-1-00, where Cretaceous granitic rocks were encountered at elevation 1906 ft.

3.3.6 EOLIAN DEPOSITS (Qes AND Ql)

Surface eolian deposits were encountered in borings PH3-5-00, PH3-9-00, PH3-12-00, DP-10-00, PH3-14-00, PH3-15-00, DP-11-01, and BPA-1-01. The eolian deposits consist of medium dense, silty sand, loose to medium dense, sandy silt, and loose silt with sand. The thickness varies from about 5 ft in boring PH3-9-00 to about 37.5 ft in boring BPA-1-01. The eolian deposits are underlain by Cretaceous granitic rocks in borings PH3-12-00, DP-10-00, PH3-14-00, PH3-15-00, DP-11-00, and BPA-1-01; mass wasting deposits in boring PH3-5-00; and Latah Formation in PH3-9-00.

3.3.7 SURFICIAL MASS WASTING DEPOSITS (Qmw)

Surficial mass wasting deposits (talus/colluvium) were observed in the borings to be variable in thickness and composition, ranging from basalt boulders and cobbles in borings PH3-5-00, PH3-6A-00, and PH3-6B-00; poorly graded sand with gravel in boring PH3-7-00; sandy silt with angular gravel in boring PH3-8B-00; poorly graded sand with gravel and cobble and boulders in boring PH3-9-00; and silt with gravel and scattered cobbles and boulders in borings PH3-11-01 and PH3-13-01. Thickness was variable, ranging from about 3 ft in boring PH3-11-01 to about 25 ft in boring PH3-5-00. The mass wasting deposits overlie the Latah Formation in borings PH3-5-00, PH3-6A-00, PH3-6B-00, PH3-7-00,

PH3-8B-00, and PH3-9-00. At boring PH3-11-01, Cretaceous granitic rocks underlie the surficial mass wasting deposits.

3.3.8 ALLUVIUM (Qa)

Recent alluvium was encountered in boring PH3-4-01 at the surface and extends to a depth of about 12 to 13 ft. The alluvium was observed to consist of loose silty sand and very soft elastic silt.

3.4 GROUNDWATER

Groundwater was not reported in any of the borings at the time of drilling. Piezometers were installed in all of the borings except PH3-15-00, for subsequent measurement of groundwater levels. Table A-2 summarizes groundwater levels measured in the piezometers on February 23, March 15, and March 19, 2001. Groundwater depths were measured by a representative of WSDOT and are shown at each boring location measured on the summary logs in Appendix A.

4.0 USE OF THIS REPORT

This geotechnical data report was prepared for the exclusive use of the Washington State Department of Transportation for specific application to this project. The use by others, or for purposes other than intended, is at the user's sole risk. The findings, recommendations, and opinions presented herein are based on review of readily available geologic information, field explorations, and our understanding of the project requirements. Within the limitations of scope, schedule, and budget, information presented in this data report was prepared in accordance with generally accepted professional geotechnical engineering principles and practices in this area at the time this document was prepared. We make no other warranty, either express or implied.

We appreciate the opportunity to provide these services to the Washington State Department of Transportation and look forward to providing further assistance on this project. Please contact either Mr. Edward J. Heavey at 253-926-2493 or Mr. Dennis Stettler at 425-778-0907 if you have any questions regarding the information contained in this data report.

LANDAU ASSOCIATES, INC.

Man. D. Evans (Fan)

By:

Edward J. Heavey, P.E.

Senior Engineer

And

Dennis R. Stettler, P.E.

Principal

EJH/DRS/jas

5.0 REFERENCES

Boleneus, D.E. and R.E. Derkey. 1996. Geohydrology of the Peone Prairie, Spokane County, Washington. Washington Geologist. Vol. 24. No. 1. March 1996.

Derkey, R.E. 1997. Geologic Map of the Mead 7.5 Minute Quadrangle, Spokane County, Washington. Washington Division of Geology and Earth Resources Open File Report 97-3. June 1997.

Derkey, R.E., W.J. Gerstel, and R.L. Logan. 1998. Geologic Map of the Dartford 7.5 Minute Quadrangle, Spokane County, Washington. Washington Division of Geology and Earth Resources Open File Report 98-6. June 1998.

Gerstel, W.J. 30 November 2000. Personal communication (telephone by Edward J. Heavey, Landau Associates, Inc.). Washington Division of Geology and Earth Resources (DNR).

Griggs. 1973. Geologic Map of the Spokane Quadrangle, Washington, Idaho, and Montana. U.S. Geological Survey Miscellaneous Geological Investigations Map I-768.

ITD. 13 September 2000. Field trip attended by WSDOT, Idaho Transportation Department (ITD), and Landau Associates personnel to observe exposures of Latah Formation along I-90 in Coeur d'Alene area.

Joseph, N.L. 1990. Geologic Map of the Spokane 1:100,000 Quadrangle, Washington-Idaho. Washington Division of Geology and Earth Resources Open File Report 90-17.

Kiver, E.P, J.G. Rigby, and D.F. Stradling. 1979. Surficial Geologic Map of the Spokane Quad, Washington. Washington Division of Geology and Earth Resources Open File Report 79-11.

Molenaar, D. 1988. The Spokane Aquifer, Washington: Its Geologic Origin and Water-Bearing and Water-Quality Characteristics. U.S. Geological Survey Water-Supply Paper 2265.

Robinson, J.D. 1991. Stratigraphy and Sedimentology of the Latah Formation, Spokane County, Washington. A Thesis Presented to Eastern Washington University in Partial Fulfillment of the Requirements for the Degree Master of Science in Geology. Spring 1991.

USGS. 1973. Photorevised 1981. Mead Quadrangle, Washington - Spokane, Co., 7.5 Minute Series (Topographic). U.S. Geological Survey.

Weis, P.L. and G.M. Richmond. 1965. Maximum Extent of Late Pleistocene Cordilleran Glaciation in Northeastern Washington and Northern Idaho. U.S. Geological Survey Professional Paper 525-C. pp. C128-C132.

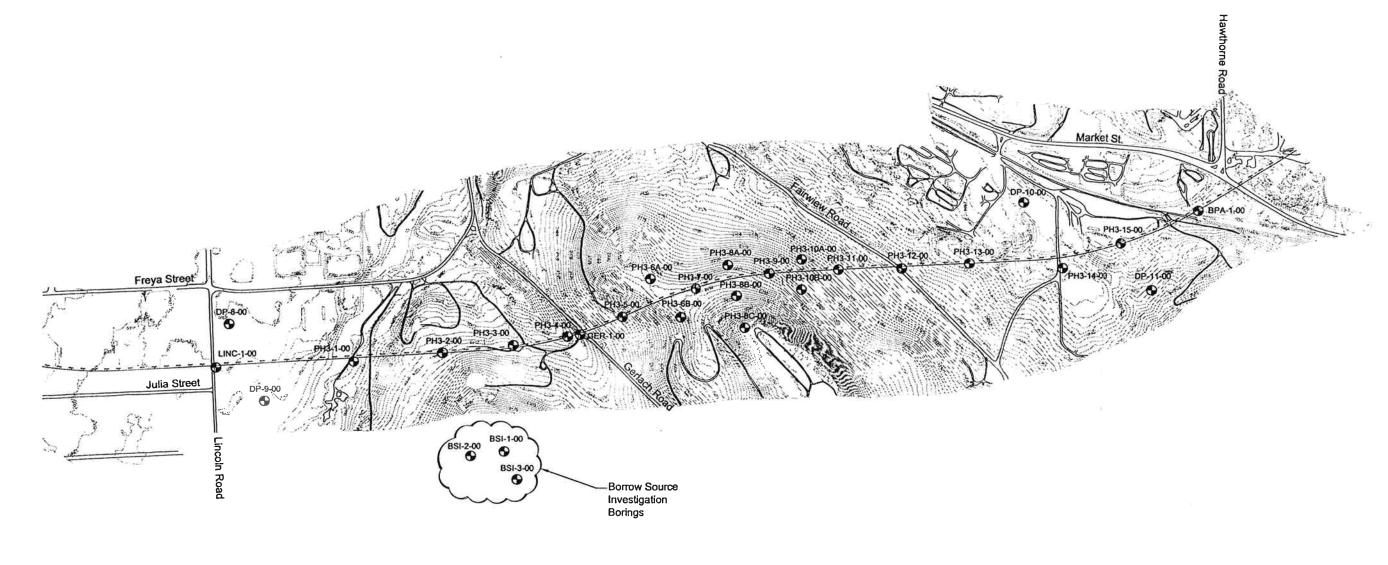
Base drawing provided by WSDOT

Landau Associates

SR 395 North Spokane Corridor Project Spokane, Washington

Vicinity Map Lincoln Road to Market Street

Figure



Legend

♦ LINC-1-00 Approximate Boring Location

Scale in Feet

Reference: Base Drawing Provided by WSDOT

SR 395 North Spokane Corridor Project Spokane, Washington Site and Exploration Plan Section 3 - Lincoln Road to Market Street

Figure 2

Landau Associates

Field Explorations

APPENDIX A FIELD EXPLORATIONS

Subsurface conditions for the Section 3 portion of the North Spokane Corridor project were explored by completing a series of 26 borings along the proposed route. The location of the borings are shown on Figure 2. The borings were completed to depths of between approximately 21.5 to 308 ft during the period of November 9, 2000, and February 15, 2001. Borings PH3-4-01, PH3-5-00, PH3-6A-00, PH3-6B-00, PH3-7-00, PH3-8A-00, PH3-8B-00, PH3-8C-01, PH3-9-00, PH3-10A-00, PH3-10B-00, PH3-11-01, PH3-13-01, DP-10-00, PH3-15-00, DP-11-01, and BPA-1-01 were drilled by Crux Subsurface, Inc. of Spokane, Washington (under contract to WSDOT) using a track-mounted, Morooka MST-1100 drill rig and the triple tube drilling method (HWT Casing with an HQ core). Borings LINC-1-00, DP-8-00, DP-9-00, PH3-1-00, PH3-2-00, PH3-3-00, GER-1-00, PH3-12-00, and PH3-14-00 were drilled by Ruen Drilling, Inc. of Clark Fork, Idaho (under contract to WSDOT) with a truck-mounted, B-61 drill rig advancing hollow-stem augers. HWT casing with HQ core was used to advance borings GER-1-00, PH3-12-00, and PH3-14-00 into rock.

Disturbed samples of the soil encountered in the borings were obtained at periodic intervals using a 2.0-inch, outside-diameter (OD), split-spoon sampler. The sampler was driven into the undisturbed soil ahead of the auger bit with a 140-pound drop hammer falling a distance of approximately 30 inches. The number of blows required to drive the sampler for each six-inch interval of soil penetration, or part thereof, is noted on the boring logs next to the appropriate sampler notation. The number of blows required to drive the sampler the last 12-inches of the 18-inch drive, termed the standard penetration resistance (N), is also noted on the boring logs.

Where competent bedrock was penetrated in the boring, continuous rock core was recovered and placed in wooden core boxes and delivered to WSDOT. The Rock Quality Designation (RQD), Core Recovery (% Rel), Fracture Frequency (Fractures per Foot [FPF]), and Rock Strength (R) were determined in the field for each rock core sample recovered. The values for RQD, % Rel, FPF, and R are shown on the summary logs in this appendix.

The field explorations were coordinated and monitored by a geologist from our staff or by a geologist from Yonemitsu Geologic Services (under subcontract to Landau Associates) who maintained detailed records of encountered subsurface soil and groundwater conditions, obtained representative soil samples, and described the soil by visual and textural examination. The exploration locations, shown on Figure 2, were field-located by WSDOT surveyors. Ground surface elevations at the boring locations

were determined by WSDOT surveyors. Table A-1 provides a summary of the boring locations by stationing and offset, ground surface and casing elevation, and other pertinent data.

Standpipe piezometers were installed in all of the borings except PH3-15-00 for subsequent measurement of groundwater levels. Details of the piezometer installation are shown on the summary logs in this appendix. The remaining borings were abandoned in accordance with 173-160 WAC. A summary of the groundwater level measurements are presented in Table A-2.

All soil encountered in the borings was described using the WSDOT Soil and Rock Classification System, which is a modified version of the Unified Soil Classification System as outlined in ASTM D2488 Standard Recommended Practice for Description of Soil (Visual-Manual Procedures).

A key to the classification system and the boring logs is presented on Figure A-1 in this appendix. The boring logs are presented on Figures A-2 through A-27.

TABLE A-1

BORING DATA

		Piezometer	YES	ÉS	YES	YES	YES	'ES	YES	YES	YES	YES	ÉS	YES	ES,	ÈS,	ÆS.	YES	YES	'ES	ES,	ÆS	YES	'ES	'ES	8 9	YES	YES
				<u>></u>																_				<i>></i>				
	Easting	(Proj. Datum)	2824552.21	2824187.66	2824833.22	2824506.73	2824437.43	2824369.92	2824302.03	2824285.49	2824135.92	2823813.08	2824136.68	2823895.07	2823701.11	2823957.93	2824226.07	2823771.50	2823907.48	2823654.17	2823739.85	2823728.48	2823682.43	2823168.77	2823719.19	2823510.58	2823903.02	2823235.28
	Northing	(Proj. Datum)	613445.27	613553.34	613854.61	614587.96	615332.24	615918.30	616367.49	616469.87	616824.54	617067.41	617318.12	617446.10	617715.75	617789.60	617859.33	618058.03	618325.78	618325.00	618630.77	619159.02	619726.19	620171.70	620504.37	620998.39	621260.28	621638.56
Offset	(-)=[t	(+)=Bt	15.01	-343.39	317.06	29.40	-0.86	-28.28	-3.73	10.11	-0.47	-197.87	195.12	6.39	-117.91	148.18	424.48	-0.44	151.28	-101.73	-0.17	16.13	-0.18	-489.81	89.14	-5.50	450.15	3.92
	Station	(#)	290+08.071	291+35.079	294+02.147	301+51.577	308+98.463	314+89.705	319+46.098	320+48.783	324+33.183	327+80.924	328+96.309	331+00.923	334+03.679	334+28.445	334+51.132	337+26.823	339+87.096	339+99.581	343+00.441	348+28.560	353+97.370	358+69.150	361+65.202	366+86.700	368+01.190	373+85.145
Pipe	or Cap	Elev	2000.6	2001.6	1998.8	1987.3	2078.3	2081.3	2064.0	2078.7	2153.5	2239.4	2242.9	2246.6	2221.8	2274.2	2350.4	2219.1	2204.9	2160.9	2137.5	2072.2	2016.7	1957.7	1979.6	N/A	2009.6	1948.1
Ground	Elev at	Bore Hole	2000.6	2001.6	1998.8	1984.7	2075.6	2078.6	2060.6	2075.6	2151.1	2237.3	2241.0	2244.7	2219.7	2271.5	2348.1	2216.6	2202.2	2158.1	2133.9	2072.2	2014.8	1955.1	1976.1	1944.4	2007.3	1945.4
	Bore Hole	# QI	LINC-1-00	DP-8-00	DP-9-00	PH3-1-00	PH3-2-00	PH3-3-00	PH3-4-00	GER-1-00	PH3-5-00	PH3-6A-00	PH3-6B-00	PH3-7-00	PH3-8A-00	PH3-8B-00	PH3-8C-00	PH3-9-00	PH3-10B-00	PH3-10A-00	PH3-11-00	PH3-12-00	PH3-13-00	DP-10-00	PH3-14-00	PH3-15-00	DP-11-00	BPA-1-00
	Bore Hole	Point #	BH37820	BH37815	BH37821	BH39055	BH37822	BH37824	BH39629	BH37826	BH39631	BH39667	BH39677	BH39679	BH378762	BH378767	BH39669	BH378764	BH39670	BH39673	BH39675	BH39052	BH39665	BH39053	BH39045	BH39048	BH39663	BH39661
	Property	Owner	Lincoln St.	Digitron	Digitron	W. W. Branco (McKee)	J.E. Blystone	J.E. Blystone	J.E. Blystone	J.E. Blystone	H.E. Flesland	C.B.& E. CHRISTOPHERSON	C.B.& E. CHRISTOPHERSON	C.B.& E. CHRISTOPHERSON	Fairview Rd.	J.E. HESSEL	J. Hessel, etux, et al	Piper Rd.	L.L. & K.L. Wittkof	L.L. & K.L. Wittkof	BPA							
	Parcel	No.	Lincoln St.	6-05350	6-05350	6-05352	6-05355	6-05355	6-05355	6-05355	6-05358	6-05358	6-05358	6-05358	6-05358	6-05358	6-05358	6-05358	6-05402	6-05402	6-05402	Fairview Rd.	6-05403	6-05404	Piper Rd.	6-05406	6-05406	6-05408
	Proj.	è Ž	ო	ო	ო	ო	ო	ო	ო	ო	ო	က	ო	က	ო	ო	ო	ო	ო	ო	ო	ო	ო	ო	ო	ო	က	ო

TABLE A-2 GROUNDWATER DATA

		Ground	Depth to Groundwater (ft)					
Boring No.	Approx. Station	Elevation (ft)	Feb. 23, 2001	Mar. 15, 2001	Mar. 19, 2001			
LINC-1-00	290+08	2000.6	Dry	***	***			
DP-8-00	291+35	2001.6		Dry	***			
DP-9-00	294+02	1998.8		Dry	***			
PH3-1-00	301+52	1984.7	455	Dry				
PH3-2-00	308+98	2075.6	16.5		F			
PH3-3-00	314+90	2078.6	Dry		122			
PH3-4-01	319+46	2060.6	6.4					
GER-1-00	320+49	2075.6	21.4	***				
PH3-5-00	324+33	2151.1	***	31.7				
PH3-6A-00	327+81	2237.3		122.8	***			
PH3-6B-00	328+96	2241.0	***	87.6				
PH3-7-00	331+01	2244.7	arr.	103,5				
PH3-8A-00	334+04	2221.8		68.9	222			
PH3-8B-00	334+28	2271.5	400	127.2	1419			
PH3-8C-01	334+51	2348.0		***	129.9			
PH3-9-00	337+27	2216.6		103.2	844			
PH3-10A-00	340+00	2158.1	(***:	Dry	-			
PH3-10B-00	339+87	2202.2		78.5	***			
PH3-11-01	343+00	2133.9		Dry				
PH3-12-00	348+29	2072.2	2.2	Dry				
PH3-13-01	353+97	2014.8		26.7	-447			

Test Boring Legend

Page 1 of 2

	Sampler Symbols
X	Standard Penetration Test
	Oversized Penetration Test (Dames & Moore, California)
	Shelby Tube
P	Piston Sample
- Ā	Washington Undisturbed
	Becker Hammer
Ш	Core
G	Grab Sample
B	Bag Sample

Well Symbols
Cement Surface Seal
Piezometer Pipe in Granular Bentonite Seal
Piezometer Pipe in Sand
Well Screen in Sand
Granular Bentonite Bottom Seal
Inclinometer Casing in Concrete Bentonite Grout

I	aboratory Testing Codes
υυ	Unconsolidated Undrained Triaxial
CU	Consolidated Undrained Triaxial
CD	Consolidated Drained Triaxial
UC	Unconfined Compression Test
DS	Direct Shear Test
CN	Consolidation Test
GS	Grain Size Distribution
MC	Moisture Content
SG	Specific Gravity
OR	Organic Content
DN	Density
AL	Atterberg Limits
PT	Point Load Compressive Test
SL	Slake Test
DG	Degradation
LA	LA Abrasion
1	

	Soil Density	Modifiers	3
Gravel, S	Sand & Non-plastic Silt	Elastic	Silts and Clay
SPT Blows/ft	Density	SPT Blows/ft	Consistency
0-4	Very Loose	0-1	Very Soft
5-10	Loose	2-4	Soft
11-24	Medium Dense	5-8	Medium Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

А	ngularity of Gravel & Cobbles
Angular	Coarse particles have sharp edges and relatively plane sides with unpolished surfaces.
Subangular	Coarse grained particles are similar to angular but have rounded edges.
Subrounded	Coarse grained particles have nearly plane sides but have well rounded corners and edges.
Rounded	Coarse grained particles have smoothly curved sides and no edges.

S	oil Moisture Modifiers
Dry	Absence of moisture; dusty, dry to touch
Moist	Damp but no visible water
Wet	Visible free water

Soil Structure
Alternating layers of varying material or color at least 6mm thick; note thickness and inclination.
Alternating layers of varying material or color less than 6mm thick; note thickness and inclination.
Breaks along definite planes of fracture with little resistance to fracturing.
Fracture planes appear polished or glossy, sometimes striated.
Cohesive soil that can be broken down into smaller angular lumps which resist further breakdown.
Soil structure is broken and mixed. Infers that material has moved substantially - landslide debris.
Same color and appearance throughout.

	HCL Reaction
No HCL Reaction	No visible reaction.
Weak HCL Reaction	Some reaction with bubbles forming slowly.
Strong HCL Reaction	Violent reaction with bubbles forming immediately.

Degree of	Vesicularity of Pyroclastic Rocks
Slightly Vesicular	5 to 10 percent of total
Moderately Vesicular	10 to 25 percent of total
Highly Vesicular	25 to 50 percent of total
Scoriaceous	Greater than 50 percent of total



Test Boring Legend

Page 2 of 2

		Grain Size
Fine Grained	< 1mm	Few crystal boundaries/grains are distinguishable in the field or with hand lens.
Medium Grained	1mm to 5mm	Most crystal boundaries/grains are distinguishable with the aid of a hand lens.
Coarse Grained	> 5mm	Most crystal boundaries/grains are distinguishable with the naked eye.

	Weathered State	
Term	Description	Grade
Fresh	No visible sign of rock material weathering; perhaps slight discoloration in major discontinuity surfaces.	1
Slightly Weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than its fresh condition.	II
Moderately Weathered	Less than half of the rock material is decomposed and/or disintegrated to soil. Fresh or discolored rock is present either as a continuous framework or as core stones.	Ш
Highly Weathered	More than half of the rock material is decomposed and/or disintegrated to soil. Fresh or discolored rock is present either as discontinuous framework or as core stone.	IV
Completely Weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.	v
Residual Soil	All rock material is converted to soil. The mass structure and material fabric is destroyed. There is a large change in volume, but the soil has not been significantly transported.	VI

		Relative Rock Strength	
Grade	Description	Field Identification	Uniaxial Compressive Strength approx
R1	Very Weak	Specimen crumbles under sharp blow from point of geological hammer, and can be cut with a pocket knife.	1 to 25 MPa
R2	Moderately Weak	Shallow cuts or scrapes can be made in a specimen with a pocket knife, Geological hammer point indents deeply with firm blow.	25 to 50 MPa
R3	Moderately Strong	Specimen cannot be scraped or cut with a pocket knife, shallow indentation can be made under firm blows from a hammer.	50 to 100 MPa
R4	Strong	Specimen breaks with one firm blow from the hammer end of a geological hammer.	100 to 200 MPa
R5	Very Strong	Specimen requires many blows of a geological hammer to break intact sample.	Greater than 200 MPa

		D	iscontinuities			
Sı	pacing		Condition			
Very Widely	Greater than 3 m	Excellent	Very rough surfaces, no separation, hard discontinuity wall			
Widely	1 m to 3 m	Good	Slightly rough surfaces, separation less than 1 mm, hard			
Moderately	0.3 m to 1 m		discontinuity wall.			
Closely	50 mm to 300 mm	Fair	Slightly rough surfaces, separation greater than 1 mm, soft discontinuity wall.			
Very Closely	Less than 50 mm	Dans	Slickensided surfaces, or soft gouge less than 5 mm thick, or open discontinuities 1 to 5 mm.			
	QD (%)	Poor				
A STATE OF THE PARTY OF THE PAR	core in pieces > 100mm) th of core run	Very Poor	Soft gouge greater than 5 mm thick, or open discontinuities greater than 5 mm.			

Washington State

Department of Transportation LINC-1-00 HOLE No XL0715 SR395 North Spokane Corridor Project Job No. PROJECT Spokane, Washington S,R. 395 290+08.071 Offset 15.01 Station Ground El 2000.6 (609.78 m) B-61 Casing Equipment Method of Boring **HSA** 1 of Completion Date November 13, 2000 Sheet Start Date November 13, 2000 Sample Type Standard Sample No. (Tube No.) instrument Weters (m) SPT Depth (ft) Profile Lab Penetration Description of Material Blows/6* Blows/ft (N) 10 20 30 Well graded SAND, subrounded to subangular, medium D-1 8 dense, grayish brown, moist, homogeneous. (Qf) 11 (19)2 10 D-2 Poorly graded, fine to medium SAND, subrounded to subangular, grayish brown, moist, homogeneous. (Qf) 10 11 (21)15 Well graded SAND, subrounded to subangular, medium D-3 11 dense, gravish brown moist, homogeneous. (Qf) 12 Poorly graded, fine to medium SAND, subrounded to (23)5 subangular, medium dense, grayish brown, moist, homogeneous, (Qf)

INPROJECT/244/006/WSDOTPH3 GPJ WSDOT GDT 5/22/01+2:22:04 P5

HOLE No LINC-1-00

SOIL INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01*2:22:05 P5



Figure A 2 Page (2 of 3)

Sheet 2 of 3 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

60 1000	Meters (m)	Profile	10	Pene	ndard stration ws/ft 30	40	SP1 Blows/6' (N)	Sample Type	Sample No (Tube No.)	Lab	2)20	Description of Material	Groundwater	Instrument
	- 7			+	***	1	8 10 10 (20)	X	D-4			Poorly graded, fine to medium SAND, subrounded to subangular, medium dense, grayish brown, moist, homogeneous. (Qf)		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
25	8			•			7 8 11 (19)	X	D-5			Well graded SAND with trace of fine gravel, subrounded to subangular, medium dense, grayish brown, moist, homogeneous. (Qf)		
G	-9			1			11 17 24 (41)	X	D-6			Well graded SAND with trace of fine gravel, subrounded to subangular, dense, grayish brown, moist, homogeneous. (Qf)		
55 -	10				1 1 1 1 1 1 1		14 21 35 (56)	X	D-7			Well graded SAND with trace of fine gravel, very dense grayish brown, moist, homogeneous (Qf)		
	15						14 32 31 (63)	X	D-8			Well graded SAND, subrounded to subangular, very dense, grayish brown, moist, homogeneous. (Qf)		
	13				1									

Washington State Department of Transponation

PROJECT SR395 North Spokane Corridor Project

LINC-1-00

HOLE No.

SOIL INPROJECTI244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01+2:22:06 PS

Sheet 3 of Job No. XL0715

Depth (ft)	Meters (m)	Profile		Standar Penetrat Blows/	ion ft	SPT Blows/6* (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	- 14		10	20 :	30 40	11 17 21 (38)	X	D-9		ell graded SAND, subrounded to subangular, der ayish brown, moist, homogeneous. (Qf)	ise,	
50 -	- 15		1	1 1 1 1 1 1 1		15 16 16 (32)	X	D-10		ell graded SAND, subrounded to subangular, ver inse, grayish brown, moist, homogeneous. (Qf)	y	
	- 16		I I I		 						-	
55	— 1 7											
60 -	- 18											
	19											
65	20		1 1 1 1 1 1 1 1 1									
70	21										e A-2 Page	

Washington State
Department of Transportation

Station Equipment Method of B Start Date (ii) those of the state of t	Spoka 2924 B-61 Boring	HSA Standard Penetration Blows/it 10 20 30 40	SPT Blows/6*	Com		-343	.39	S.R. 395 C.S.		
Equipment Method of 8 Start Date (i) (ii) (iii) (ii	2924 Bering Nove	HSA mber 14, 2000 Standard Penetration Blows/ft	SPT Blows/6*	Com	Offset	-343	.39	C.S.		
Equipment Method of 8 Start Date (i) (ii) (iii) (ii	Boring Nove	HSA mber 14, 2000 Standard Penetration Blows/ft	SPT Blows/6*	Com	Casing					***
Method of B Start Date (ii) Weters 5	Boring Nove	HSA mber 14, 2000 Standard Penetration Blows/ft	SPT Blows/6*	Com						
Start Date (II) (III) Weters (III) 5	Nove	Standard Penetration Blows/ft	SPT Blows/6*		npletio					
Depth (ft)		Standard Penetration Blows/ft	SPT Blows/6*		pletio			Chart 1 of 2		
5	Profile	Penetration Blows/ft	Blows/6*	Ψ		-	November 14, 2000	Sheet 1 of 2	T.	Γ
?			(N)	Sample Type	Sample No.	Lab		Description of Material	Groundwater	
-			9 15 12 (27)	X	D-1		dense, grayish brov	, rounded to subrounded, medium wn, moist, homogeneous. (Qf) , subrounded to subangular, dense, st, homogeneous. (Qf)		KARARARARA MANANA MANAN
15 -			8 7 7 (14)	X	D-3		Poorly graded, fine subangular, medium homogeneous (Qf)	to medium SAND, subrounded to n dense, grayish brown, moist,		

Washington State
Department of Transportation

Figure A-3 Page (2 of 2)

HOLE No. DP-8-00

Sheet 2 of 2
Job No. XL0715

SR395 North Spokane Corridor Project **PROJECT** Groundwater Sample Type Sample No. Standard (Tube No.) Meters (m) SPT Depth (ft) Tests Lab Penetration Blows/6* Description of Material Blows/ft (N) 30 40 10 20 Poorly graded, medium SAND, subrounded to subangular, medium dense, grayish brown, moist, D-4 10 9 homogeneous (Qf) 9 (18)25 9 30 10 35 I:/PROJECT\244\006\WSDOTPH3 GPJ WSDOT.GDT 5/22/01-2:21:32 P5 12 40 13

Washington State
Department of Transportation

5		5				ŝta		2 R
- 4	- 3	-1	Meters (m)	thod of f irt Date	uipment	ntion		OJECT
			Profile			294+	Spoka	SR395
			Standard Penetration Blows/ft 10 20 30 40	HSA nber 13, 2000	1104	02.147	ne, Washington	North Spokane Cor
6 17 18 (35)	4 6 9 (15)	8 4 5 (9)	SPT Blows/6* (N)					ridor Projec
X	X	X	Sample Type		((t
D-3	D-2	D-1	Sample No (Tube No.)	npletion	Casing	Offset		
			Lab Tests			317.0		
Well graded SAND with scattered fine to medium gravel, subrounded to subangular, dense, grayish brown, moist, homogeneous. (Of)	Well graded SAND with scattered fine to medium gravel, subrounded, medium dense, grayish brown, moist, homogeneous. (Qf)	SILT with sand and trace of fine gravel, subrounded to subangular, loose, brown, moist, homogeneous. (Qf)	Description of Material	November 14, 2000 Sheet 1 of 2	Ground El	6 C.S.	S.R. 395	Job No. XL0715
			Control of the contro					

Washington State Department of Transportation

Figure A-4 Page (2 of 2)

HOLE No DP-9-00

PROJECT SR395 North Spokane Corridor Project

Sheet 2 of 2

Job No XL0715

Death (ft)	Meters (m)	Profile	10	Penet	ndard Iration ws/ft 30	40	SPT Blows/6° (N)	Sample Type	Sample No. (Tube No.)	Lab	Tests	Description of Material	Groundwater	
			-		ļ	1	12 14 18 (32)	Y	D-4			Poorly graded, fine to medium SAND, subrounded, dense, grayish brown, moist, homogeneous. (Qf)		***************************************
	- 7		1	1	1	1								
25	- 8		1	1	1 1	i I								
] 	1	1									
30 -	- 9		1	į.	1	I I I							_	
	- 10		 	; f	1	1 1 1							-	
35			I I	1	l l	1 1 1								
	1).		I. I.	1	1]]]							-	
	12		 	1	-]								
40 -			1	I I	1	I							-	
-	13			Ĭ	1									

Washington State Department of Transportation

LOG OF TEST BORING PH3-1-00 HOLE No PROJECT SR395 North Spokane Corridor Project XL0715 Job No. Spokane, Washington S.R. 395 Station 301+51.577 Offset 29.40 C.S. Equipment B-61 Casing Ground El 1984.7 (604.94 m) Method of Boring **HWT** Start Date November 29, 2000 Completion Date November 29, 2000 Sheet 1 of (Tube No.) Sample Type Standard Sample No. Meters (m) Depth (ft) SPT Profile Lab Penetration Blows/6* Description of Material Blows/ft (N) 20 30 40 0.1 8 Silty SAND, medium dense, brown, moist, homogeneous. 8 no HCL reaction. (Qf) 8 (16)3 10 Silty SAND, medium dense, brown, moist, homogeneous, 0.2 6 no HCL reaction. (Qf) 5 (11)0.3 Silty SAND, medium dense, very pale brown, dry, 9 11 homogeneous, no HCL reaction. (Qf) 14 (25)

INPROJECT/244/006/WSDOTPH3,GPJ WSDOT GDT 5/22/01+2:22:22 PS

20

HOLE No PH3-1-00

PROJECT

SOIL INPROJECTIZ44/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:22:23 PS

Washington State
Department of Transportation

SR395 North Spokane Corridor Project Sheet 2 of 5

Job No. XL0715

Standard Meters (m) Sample No. £ (Tube No.) SPT Instrument Profile Tests Penetration Lab Depth Blows/6° Description of Material Blows/ft (N) 10 20 30 11 D-4 Poorly graded SAND with gravel, rounded to subangular, 14 medium dense, homogeneous, no HCL reaction. (Qf) 12 (26)25 22 D-5 Well graded SAND with scattered fine gravel, 24 subrounded, very dense, brown, moist, laminated, strong 34 HCL reaction, (Qf) (58)30 Well graded SAND, subrounded, dense, brown, wet, 10 D-6 15 laminated, strong HCL reaction. (Qf) 24 (39)10 35 D-7 17 Well graded SAND, subrounded, dense, brown, wet, 19 homogeneous, strong HCL reaction. (Qf) 23 (42)12 Well graded SAND, subrounded, dense, light grayish 24 OB 30 brown, wet, homogeneous, strong HCL reaction. (Qf) 41 (71)13

Washington State
Department of Transportation

HOLE No. PH3-1-00

SOIL INPROJECT/244/006/WSDOTPH3 GPJ WSDOT GDT 5/22/01+5/38:03 P5

PROJECT SR395 North Spokane Corridor Project

Sheet 3 of 5 Job No. XL0715

Depth (ft)	Meters (m)	Profile	10	Pene	ndard tration ws/ft 30	40	SPT Blows/6* (N)	Sample Type	Sample No.	('on agn)	Lab	Description of Material	Groundwater	Instrument
	- 14				1 1 1	>>4	25 29 43 (72)	X	D-9			Well graded SAND, subrounded, very dense, light grayish brown, wet, homogeneous, strong HCL reaction. (Qf)		SESSESSES SESSES
50	15 16						22 21 27 (48)	X	D-10			Well graded SAND, subrounded, very dense, light grayish brown, wet, homogeneous, no HCL reaction. (Qf)		
55 —	- 17					 	40 22 50/4	X	D-11			Well graded SAND, subrounded, very dense, light grayish brown, wet, homogeneous, no HCL reaction, (Qf)		
60	- 18					>>•	22 34 50/5*	X	D-12			Poorly graded SAND, subrounded, light grayish brown, very dense, wet, homogeneous, no HCL reaction. (Qf)		
	IS		1									Soil drilling halted due to rock. Log continues on following page.		
65.	So													
	21		1		i i								-	

Washington State
Department of Transportation

PH3-1-00 HOLE No. PROJECT SR395 North Spokane Corridor Project Job No XL0715 Spokane, Washington S.R. **395** Station 301+51.577 Offset 29.40 C.S. Equipment B-61 Ground El 1984.7 (604.94 m) Casing Method of Boring **HWT**

Meters (m)	Profile	1	Rock Q Design (%	nation	80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	
5 20			1 1 1 1 1 1 1 1		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	30			RUN 1		Boulders and Cobbles, subangular, very dense, dark gray, wet, homogeneous, no HCL reaction. (Qf)		8
21			1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	 	0 0			RUN 3		Boulders and Cobbles, subangular, very dense, dark gray, wet, homogeneous, no HCL reaction. (Qf)		
22		1				26			RUN 4		Boulders and Cobbles, subangular, very dense, dark gray, wet, homogeneous, no HCL reaction. (Qf) Boulders and Cobbles, subangular, very dense, dark		
23				1 1 1		44_			RUN 5		gray, wet, homogeneous, no HCL reaction. (Qf) Fat CLAY, very stiff, light brown, wet, larminated, no HCL reaction. (Qf)	-	
24			1	t L L				X	D-13	10 17 28 (45)	Granite, pale green, medium to coarse grained, completely weathered, very weak rock (R1). Discontinuities are widely spaced and in poor		

ROCKN INPROJECT/244/006/WSDOTPH3 GPJ WSDOT GDT 5/22/01*2:47:01 P5

Washington State
Department of Transportation

HOLE No. PH3-1-00

ROCKN INPROJECT 244/006/WSDOTPH3 GPJ WSDOT GDT 5/22/01+2:47,03 P5

PROJECT SR395 North Spokane Corridor Project

Sheet 5 of 5 Job No. XL0715

£ (E)	ē		Rock (%	* 5	Type	No.	ata & SPT (N)		vater	eu
Depth (It) Maters (m)	Profile	20	(%		80	Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6"/SPT (N)	Description of Material	Groundwater	Instrument
85 - 26	こんしたったったし					100	RI		RÚN 7				
- 27						100	RI		RUN 8		Granite, pale green, medium to coarse grained, completely weathered, very weak rock (R1). Discontinuities are widely spaced and in poor condition. (Tkia)		
28						o					Granite, pale green, medium to coarse grained, completely weathered, very weak rock (R1). Discontinuities are widely spaced and in poor condition. (Tkia)		
95 29						100	RI		RUN 9				
0 30											Granite, pale green, medium to coarse grained, completely weathered, very weak rock (R1). Discontinuities are widely spaced and in poor condition. (Tkia)		
- 31		1	I I I	1 1 1 1 1	1								
5 - 32		1 1 1		1	I I I								

Washington State

Department of Transportation PH3-2-00 HOLE No PROJECT SR395 North Spokane Corridor Project XL0715 Job No Spokane, Washington S.R. 395 308+98.463 Station Offset -0.86 C.S. Equipment B-61 Casing Ground El 2075.6 (632.64 m) Method of Boring **HSA** Start Date November 15, 2000 Completion Date November 15, 2000 Sample Type $\hat{\mathbf{E}}$ Standard Sample No. (Tube No.) \exists SPT Lab Penetration Blows/6* Description of Material Blows/ft (N) 10 20 30 40 5 SILT with scattered coarse basalt gravel and trace of D-1 10 sand, medium dense, reddish brown, moist, homogeneous. (Qmw) (17) - 3 10-D-2 SILT, dense, reddish brown and grayish brown, moist, 9 12 homogeneous. (Mc) 19 (31)15 D-3 SILT, very dense, very dark gray, moist, homogeneous. 27 (Mc) 50/4.5* 02/23/2001

INPROJECTIZ44/006/WSDOTPH3 GPJ WSDOT GDT 5/22/01-2:23:53 PS

Figure A-6 Page (1 of 2)

HOLE No PH3-2-00

INPROJECT 244/006/WSDOTPH3 GPJ WSDOT GDT 5/22/01+2:23:54 PS



Figure A 6 Page (2 of 2)

Sheet 2 of 2 Job No. XL.0715

PROJECT _ SR395 North Spokane Corridor Project

Sample Type Meters (m) Standard Sample No. Groundwater (F) (Tube No.) Penetration Depth (Blows/6" Description of Material Blows/fi (N) 10 20 30 40 SILT, very dense, very dark gray, dry, homogeneous and 19 26 blocky (Mc) 50/3* 7 25 21 D-5 SILT, very dense, very dark gray, dry, homogeneous: 34 (Mc) 50/2 8 30 26 D-6 SILT, very dense, very dark gray, dry, blocky. (Mc) 34 50/4 10 35 -11 12 4() 13

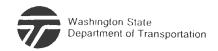
Washington State
Department of Transportation

HOLE N	o PH3	3-3-00						Department of Transp	ortation
PROJEC	T SR3	95 North Spokane Corr	idor Projec	t			Job No. X	L0715	
	Spok	ane, Washington					S.R. 395		
Station	314	+89.705			offset	-28.2			
Equipme	nt B-6	1		С	asing		Ground El	2078.6 (633.56 m)	
Method o	of Boring	HSA							
Start Dat	e Nove	mber 14, 2000	(Com	pletion	Date	November 14, 2000 Sheet 1	of3	
Depth (ft),	Profile	Standard Penetration Blows/ft 10 20 30 40	SPT Blows/6* (N)	Sample Type	Sample No.	Lab Tests	Description of Materia	ı	Groundwater
							SILT with sand and scattered subange and cobbles, dark grayish brown, mois (fill)	ular basalt gravel st, homogeneous	
5 —			7 8 9 (17)	V	D-1		SILT with trace of sand and fine grave dark brown, moist, homogeneous, (Qr	I, medium dense. nw)	**************************************
10 - 3			5 6 6 (12)	X	D-2		Silty SAND, subrounded, medium dens moist, homogeneous. (Qmw)	se, grayish brown,	
15	*		3 5 9 (14)	X	D-3		Elastic SILT with trace of fine to mediu brown, moist, homogeneous. (Mc)	m sand, stiff,	

SOIL INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01*2:24:06 PS

HOLE No PH3-3-00

INPROJECT/244/006/WSDOTPH3 GPJ WSDOT, GDT 5/22/01+2:24:07 PS



Sheet 2 of 3 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Sample Type Standard Meters (m) Sample No. (Tube No.) Depth (ft) SP1 Profile Penetration Tests Blows/6 Description of Material Blows/ft (N) 10 20 30 D-4 Elastic SILT with scattered basalt gravel, very stiff, brown, 13 moist, homogenous. (Mc) 14 (27)25 U-1 D-5 Elastic SILT, stiff, pale yellow mottled yellowish red, moist, scattered organics, iron oxide staining. (Mc) 5 (12) 9 30 U-2 SILT with scattered sand, stiff, brown, moist, 19 D-6 homogeneous, (Mc) 12 10 (22)10 35 U-3 SILT with trace of sand, brown, very stiff, moist, homogeneous. (Mc) - 11 D-7 SILT with trace of sand, very stiff to hard, brown, 11 homogeneous_(Mc) 19 (30)15 40 12 D-8 Elastic SILT with trace of coarse sand, hard, reddish 28 brown, moist, homogeneous. (Mc) 29 (57)13

HOLE No. PH3-3-00

SOIL INPROJECT/244/006/WSDOTPH3 GPJ WSDOT GDT 5/22/01*2:24:08 P5

Washington State
Department of Transportation

Sheet 3 of 3 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

PROJEC	2H3a2 MOL	th Spokane Corrido	r Project			Job No. XL0715	_	
Depth (ft) Meters (π)	Profile	Standard Penetration Blows/tt 20 30 40	SPT Slows/6.	Sample No (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
14	x x x x		27 28 27 (55)	U-4 D-9		Elastic SILT with trace of coarse sand, hard, reddish brown, moist. (Mc)		
50 -	x x x x x x x x x x x x x x x x x x	↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	9 21 25 (46)	D-10		Elastic SILT with scattered basalt gravel and trace of coarse sand, hard, brown, moist. (Mc)		
- 16			[40]				-	^^^
55 17								
60 -								
19								
65 - 20							-	
- 21								

Figure A 7 Page (3 of 3)

	21.5.11	DH.	3-4-01			LC	OG O	FTES	T BORING	Washington State Department of Tran	isporta	ition
НС	OLE No.	FII	5-4-01									
PF	ROJECT	SR3	95 North Spoka	ne Corride	or Projec	et				Job No. XL0715		
		Spok	ane, Washingto	on						S.R. 395		-
Sta	ation	319	÷46.098			(Offset	-3.7	3	C.S.		
Εq	uipment	Mor	ooka MST-110	0		(Casing			Ground EI2060.6 (628.07	n)	
Me	ethod of I	Boring	HWT/HQ Cas	sing Advar	nce							
Sta	art Date	Janu	ary 12, 2001			Соп	npletic	n Date	January 12, 2001	Sheet 1 of 3		
Depth (ft)	Meters (m)	Profile	Standa Penetral Blows/	ion	SPT Blows/6* (N)	Sample Type	Sample No.	Lab	D€	escription of Material	Groundwater	instrument
5	-1	26 32 26 32 36 3			1 1 2 (3)	X	D-1		very dark grayish bro roots	and and subangular basalt gravel, wn, moist, homogeneous, grass own, moist, homogeneous, no HCL	Z	SERVER SERVER SERVERS SERVER S
10	3	× × × × × × × × × × × × × × × × × × ×			1 1 1 (2)	X	D-2			e of medium to coarse sand, very mogeneous, no HCL reaction (Qa)		
15	5				6 9 5 (14)	X	D-3		Clayey SAND, medium HCL reaction. (Mc)	n dense, light olive brown, moist, n		

SOIL INPROJECTI244\006\WSDOTPH3 GPJ WSDOT GDT 5/22/01+2:24:19 P5

Figure A-8 Page (1 of 3)

HOLE No PH3-4-01



PROJECT SR395 North Spokane Corridor Project

Sheet 2 of 3 Job No. XL0715

Deptn (ft)	Meters (m)	Profile	10	Stand Peneti Blow	ration	40	SPT Blows/6* (N)	Sample Type	Sample No. (Tube No.)	Lab	Tests	Description of Material	Groundwater	Instrument
	-7		+				4 2 9 (11)	X	D-4			Lean CLAY with trace of sand, stiff, grayish brown, moist, homogeneous, no HCL reaction. (Mc)		
25 -	8											Soil drilling halted due to rock. Log continues on following page.		
30	- 9													
35 -	- 10												-	
	-11													
d()	-12		1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1										
a5 -	13			 	 									

Washington State

THOOLET	SR395 North Spokane Corrido	r Proje	ct	- 11.5			Job No. XL0715	
	Spokane, Washington			_			S.R. 395	
Station	319+46.098		C	Offse	et <u>-3</u>	3.73	C.S.	
Equipment	Morooka MST-1100		С	asii	ng		Ground El2060.6 (628.07 m)	
Method of E	Boring HWT/HQ Casing Advan	ce						
Start Date	January 12, 2001		Com	ple	tion Dal	e Jar	nuary 12, 2001 Sheet 3 of 3	
Depth (ft) Meters (m)	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6"/SPT (N)	Description of Material	Groundwater
8		100	R4	Ň	D-5 RUN 1	50/5*	BASALT, dark gray, fine grained, fresh, strong rock (R4). Discontinuities are close, and in fair condition.	-
30 9		100	R4		RUN 2			
- 10							BASALT, dark gray, fine grained, fresh, strong rock (R4). Discontinuities are moderately spaced, and in good condition. (Mv)	
35		100	R4		RUN 3		BASALT, dark gray, fine grained, fresh, strong rock	
7-11							(R4). Discontinuities are widely spaced, and in excellent condition. (Mv)	
4()								
- 13								

Washington State

HC)LE No.	GE	R-1-00						Department of Ti	anspor	tation	l
PR	OJECT	SR3	95 North Spokane	Corrido	or Proje	ct			Job No XL0715			
		Spok	ane, Washington						S.R. 395			
Sta	ition	320	+48.783			(Offset	10.1	1 C.S.			
Equ	uipment	B-6	1			(Casing		Ground El 2075.6 (632.64			
Mei	thod of 8	oring	HSA, HWT/HQ	Casing A	Advance)						
Sta	rt Daie	Nove	ember 15, 2000			Con	npletio	n Date	November 15, 2000 Sheet 1 of 4			
Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft 10 20 30	40	SPT Blows/6*	Sample Type	Sample No.	Lab	Description of Material		Groundwater	Instrument
15 -	3				3 5 11 (16) 5 4 5 (9)		D-2 U-1		Well graded SAND with trace of fine gravel, subrounde loose, grayish brown, moist (fill) Fat CLAY, stiff, light gray, moist, laminated, (Mc) Fat CLAY, very stiff, light gray and dark red, moist, mottled with iron oxide (Mc)			

SOIL INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01+2:21:52 PS

Washington State
Department of Transportation

HOLE No. GER-1-00

SOIL 1/PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01-5:41:59 PS

PROJECT SR395 North Spokane Corridor Project

Sheet 2 of 4

Job No. XL0715

FAC	DJECT	213	95 NOTH	1 Spo	kane (Corrido	r Projec	:1			-	Job No. XL0715		
Depth (ft)	Meters (m)	Profile	10	Stan Penet Blow	ration	40	SPT Blows/6* (N)	Sample Type	Sample No. (Tube No.)	Lab	Tests	Description of Material	Groundwater	Instrument
	- 7					>>	25 20 50/1*	X	U-2			Fat CLAY, stiff, light gray, moist, laminated, (Mc) 02/23/2001 Basalt cobble/boulder Fat CLAY, very hard, dark red and yellowish red and yellowish brown, moist (Mc)	.Σ-	
25 —	-8					>>4	50/4*	X	D-5			Clayey basalt GRAVEL, subangular, very dense, yellowish brown and black, moist (Mc)		
30	9	(222										Soil drilling halted due to rock. Log continues on following page.		
	-10													
35	-11													
10	12													
	13			 - - -										

Washington State
Department of Transportation

HC	OLE No	GER-1-00						Department of Trans	portati	tion
PF	ROJECT	SR395 North Spokane Co	orridor Proj	ect				Job No. XL0715		
		Spokane, Washington	-					S.R. 395		
Sta	ation	320+48.783		- C	Offset	10.1	1			
Eq	juipment	B-61		_ C	asing	J				
Me	ethod of	Boring HSA, HWT/HQ Cas	sing Advanc	oe .				_		
Sta	art Date	November 15, 2000		Com	pletio	n Date	November 15, 2000	Sheet 3 of 4		
Death (ft)	Meters (m)	Rock Quality Designation (%) 20 40 60 8	% Rec. FPF	Rock	Sample Type	Sample No.	Blows/6/SPT (N)	Description of Material	Groundwater	Instrument
			80	R3	Я	RUN 1		k gray to yellowish brown, fine grained,		
30 -	-9		100	R4	R	S NU	moderately w	eathered, moderately strong rock (R3). s are closely spaced, and in poor		
	10						slightly weath	gray to yellowish brown, fine grained, ered, strong rock (R4). Discontinuities aced, and in fair condition. (Mv)		
35 -	- 11		100 7	Fl4	R	UN 3				
at,	12						strong rock (R	gray, fine grained, slightly weathered, 4). Discontinuities are closely spaced, dition. (Mv) (RQD=0)		
	- 13		100	R4	Ru	JN 4				
95			100	Fl4	RU	IN 5	weathered, stro	gray, fine grained, fresh to slightly ong rock (R4). Discontinuities are , and in good condition. (Mv)	Sagas.	
	ie						BASALT, dark (R4). Discontingood condition	gray, fine grained, fresh, strong rock nuities are moderately spaced, and in (Mv)	-22	

ROCKN INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01+5:42:41 P5

HOLE No. GER-1-00

Washington State
Department of Transportation

PROJECT SR395 North Spokane Corridor Project

Sheet 4 of 4 Job No. XL0715

PR	OJECT	SH3	95 North Spokane Corridor	Projec	ct				Job No. XL0715		
Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
50 -	- 15			95	R4		RUN 6		BASALT, dark gray, fine grained, fresh, strong rock (R4). Discontinuities are closely spaced, and in good condition. (Mv)	-	
55 -	—16 —17			100	R4		RUN 8		BASALT, dark gray, fine grained, fresh, strong rock (R4). Discontinuities are moderately spaced, and in excellent condition. (Mv)	-	
60 —	18			•					BASALT, dark gray, fine grained, fresh, strong rock (R4). Discontinuities are closely spaced, and in excellent condition. (Mv)	-	
	—19										
65 —	20									-	
70 —	—21 -									-	
_	-22										

Washington State
Department of Transportation

Spokane, Washington 324+33.183 Offset0,47 C.S. Uipment	Spokane, Washington S.R. 395 ation 324+33.183 Offset -0.47 C.S. wipment Morooka MST-1100 Casing Ground El 2151.5 (655.78 m) athod of Boring HWT/HO Casing Advance In Date December 18, 2000 Sandard Penetration Blowsh 10 20 30 40 SPT Blowsh 10 20 30 40 SPT Blowsh 10 20 30 40 SPT Blowsh 10 20 30 40 SILT with sand, very dark brown, moist, homogeneous, grass roots SILT with sand, loose, brown, moist, homogeneous, grass roots SILT with sand, loose, brown, moist, homogeneous. (OI) SILT with sand, loose, brown, moist, homogeneous. (OI) Baselt BOULDERS and COBBLES (Omw) (based on drilling action no soil in sampler)	Spokane, Washington Spokane, Washington Spokane, Washington Spokane, Washington Casing Ground El 2151.5 (655.78 m) HWT/HQ Casing Advance That Date December 18, 2000 Completion Date December 18, 2000 Sheet 1 of 6 Summary Penetration Blowsh 10 20 30 40 Spokane, Washington Spokane, Washington Casing Ground El 2151.5 (655.78 m) December 18, 2000 Sheet 1 of 6 Spokane, Washington Spokane, Washington Casing Ground El 2151.5 (655.78 m) December 18, 2000 Sheet 1 of 6 Description of Material Description of Material Description of Material Spokane, Washington Spokane, Washington Spokane, Washington Casing Ground El 2151.5 (655.78 m) Description of Material Descriptio	15	10 —	5 -	Depth (ft)			Sta	
Spokane, Washington S.R. 395	Spokane, Washington S.R. 395 324+33.183 Offset -0.47 C.S.	Spokane, Washington S.R. 395 324+33.183 Offset -0.47 C.S.	- 4 c	3		Meters (π)	art Date	quipment ethod of E	ation _	
Assance	S.R. 395 33.183 Offset -0.47 C.S.	S.R. 395			0000	17 114 1 18 114 1			324	Spoka
Offset O.47 C.S. T-1100 Casing Ground El 2151.5 (655.78 m) Casing Ground El 2151.5 (655.78 m) Casing Advance Completion Date December 18, 2000 Sheet 1 of 6 Standard Penetration Blows (N) Description of Material Description of	Note	S.R. 395							+33.183	ane, Was
OffsetO	On S.R. 395 Offset0.47	OffsetO.47				Penetra Blows				hingt
S.R. 395 Offset0.47	S.R. 395 Offset0.47	S.R. 395 Offset -0.47 Casing Ground El 2151.5 (655.78 m) The second El 2151.5 (655.78 m) The second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) SILT with sand, very dark brown, moist, homogeneous, grass roots Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Basalt Boulders and Cobbine Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of Material Research of the second El 2151.5 (655.78 m) Description of the second El 2151.5 (655.78 m) Descript	 >>			tion /ft	sing Adva			on
S.R. 395 Offset	S.R. 395 Offset	S.R. 395 Offset	47 21	18 25	3 6	Blows/6		nce		
S.R. 395 Offset	S.R. 395 Offset	S.R. 395 Casing Ground El 2151.5 (655.78 m) Inpletion Date December 18, 2000 Sheet 1 of 6 Description of Material SILT with sand, very dark brown, moist, homogeneous, grass roots D-1 SILT with sand, loose, brown, moist, homogeneous. (QI) Basalt BOULDERS and COBBLES (Qmw) (based on drilling action no soil in sampler)	X	X	X	Sample Type	1	. (. (
S.R. 395 -0.47 C.S. Ground El2151.5 (655.78 m) DateDecember 18, 2000 Sheet1 of6 Description of Material SILT with sand, very dark brown, moist, homogeneous, grass roots SILT with sand, loose, brown, moist, homogeneous. (QI) Basalt BOULDERS and COBBLES (Qmw) (based on drilling action no soil in sampler)	S.R. 395 -0.47 C.S. Ground El2151.5 (655.78 m) DateDecember 18, 2000	S.R. 395 -0.47 C.S. Ground El2151.5 (655.78 m) Description of Material SILT with sand, very dark brown, moist, homogeneous, grass roots SILT with sand, loose, brown, moist, homogeneous. (QI) Basalt BOULDERS and COBBLES (Qmw) (based on drilling action no soil in sampler)	D-3	D-2	D-1	Sample No. (Tube No.)	Г	Casing	Offset	
S.R. 395 C.S	S.R. 395 C.S. Ground El 2151.5 (655.78 m) December 18, 2000 Sheet 1 of 6 Description of Material SILT with sand, very dark brown, moist, homogeneous, grass roots SILT with sand, loose, brown, moist, homogeneous. (QI) Basalt BOULDERS and COBBLES (Qmw) (based on drilling action no soil in sampler)	S.R. 395 C.S				Lab	T		-0.47	
	Groundwater	Groundwater	Basalt BOULDERS and COBBLES. (Qmw) (based on drilling action no soil in sampler)	Basalt BOULDERS and COBBLES (Qmw) (based on drilling action no soil in sampler)	SILT with sand, loose, brown, moist, homogeneous. (QI)	SILT with sand, very dark brown, moist, homogeneous,	December 18, 2000 Sheet 1 of 6	Ground El	C.S	S.R. 395

Washington State
Department of Transportation

Figure A-10 Page (2 of 6)

HOLE No. PH3-5-00

SOIL INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/23/01+11:25:41 A5

PROJECT SR395 North Spokane Corridor Project

Sheet 2 of 6 Job No. XL0715

Depth (ft)	Meters (m)	Profile	Pene Blo 10 20	ndard etration ws/ft 30 40	SPT Blows/6* (N)	Sample Type	Sample No.	Lab	Description of Material	Groundwater	Instrument
	7	0000			18 17 14 (31)	X	D-4		Basalt BOULDERS and COBBLES. (Qmw) (based on drilling action no soil in sampler)		22222222 222222222
25—	-8	0 0 0 0 0 0			16 16 19 (35)	X	D-5		Well graded basalt SAND, subrounded to subangular, dense, moist, homogeneous. (Qmw)	-	
30 —	-9			>>4	50/5.5*	X	D-6 RUN 1		Basalt BOULDERS and COBBLES. (Qmw) (based on drilling action no soil in sampler)	_ _ _ _ _	
35—	-10				5 6		D-7		SILT, orangish yellow and light gray, moist, laminated, with weathered arkosic sand. (Mc)	-	
	-11				(13)	A	RUN 2	GS MC = 58 AL	Fat CLAY with elastic silt, stiff, light gray and orangish yellow, moist, laminated. (Mc)	-	
40	- 12								Fat CLAY, light gray and dark gray, laminated. (Mc)	- 3	
1	-13				3 4 6 (10)		D-8		Fat CLAY, light gray and dark gray, laminated. (Mc)		KKKKKKKKKK
45	;	× × × × × ×							Elastic SILT, very hard, grayish brown, moist, laminated, no HCL reaction. (Mc)		

Washington State
Department of Transportation

HOLE No. PH3-5-00

SOIL INPROJECT 244006 WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:24:36 PS

PROJECT SR395 North Spokane Corridor Project

Sheet 3 of 6 Job No. XL0715

PROJECT		5 North Spokane Corridor	Tiolect			Job No. XL0715		
Depth (ft) Meters (m)	Profile	Standard Penetration Blows/ft 10 20 30 40	SPT (N) Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
-14	*		15 17 50/3	D-9		Elastic SILT, very hard, grayish brown, moist, laminated, no HCL reaction. (Mc)		
50-	* * * * * * * * * * * * * * * * * * *		9 19 50/4	D-10		Elastic SILT, very hard, grayish brown, moist, laminated, no HCL reaction. (Mc)		
						Soil drilling halted due to rock. Log continues on following page.		•17-
55-							- - 	
60-							-	
- 19						_	_	
65-							-	
70								

Washington State
Department of Transportation

Department of Transportation PH3-5-00 HOLE No. PROJECT SR395 North Spokane Corridor Project XL0715 Job No. Spokane, Washington S.R. 395 Station 324+33.183 Offset -0.47 C.S. Morooka MST-1100 Equipment Casing Ground El 2151.5 (655.78 m) Method of Boring **HWT/HQ Casing Advance** Start Date December 18, 2000 Completion Date December 18, 2000 Sheet Test Data & Blows/6*/SPT (N) **Rock Quality** Sample Type Ê Sample No. £ Rock Strength Designation Rec. Description of Material (%) 20 60 100 RUN 3 16 CLAYSTONE, light gray and dark gray, fine grained, slightly weathered, very weak rock. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in very poor condition. 55 Note: Black organics and wood debris in disturbed bedding from 53.75 to 56.25 ft -17 R1 **RUN 4** 100 SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in very poor condition. (Mc) 18 Note: Fractures at 7 to 15 degrees to horizontal, scattered organics 60 80 R1 RUN 5 SILTSTONE, fine grained, dusky yellowish brown, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in very poor condition. (Mc) 65 20 100 R1 **RUN 6** 6 SILTSTONE, fine grained, dusky yellowish brown, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in very 21 poor condition. (Mc) 70

5/22/01-2:49:07 PS

ROCKN I:PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT

HOLE No. PH3-5-00

ROCKN INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:49:08 P5

Washington State
Department of Transportation

Sheet <u>5</u> of <u>6</u> Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

PRO	DJECT	SR3	95 North Spok	cane C	orridor P	roje	ct				Job No. XL0715		
Depth (ft)	Meters (m)	Profile	Rock C Design (%	ation	E	% Rec. PF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
75-	22 	X				7	R1		RUN 8		SILTSTONE, fine grained, dusky yellowish brown, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor to very poor condition. (Mc)	-	
80-	-24	X X X X X X X X X X X X X X X X X X X				7					SILTSTONE, fine grained, dusky yellowish brown, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in very poor condition. (Mc)		
	-25	x x x x x x		 	 <u>-6</u>	6 <u>0</u>	R1		RUN 9		Note: Alternating light and dark colored laminations	-	
		X X X X X X X X X X X X X X X X X X X			' 						SILTSTONE, fine grained, dusky yellowish brown and light gray, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in very poor condition. (Mc)		
85	-26	~			1 10		R1	-	RUN 10		·		
90 -	-27	× × × × × × × × × × × × × × × × × × ×			 						CLAYSTONE, brownish gray, fine grained, slightly weathered, very weak rock (R1). Discontinuities are close to moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in fair condition. Vertical fractures, brittle and blocky from 87 to 90.5 ft. (Mc)		
- - - -	-28 ×	× × × × × × × × × × × × × × × × × × ×		4 	10 6		R1	F	RUN 11	1	CLAYSTONE, grayish orange and light gray, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along	A A A A A A A A A A A A A A A A A A A	
95-	-29 x	CX X		 	_68		R1	R	UN 12		bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) Note: Iron oxide in fractures CLAYSTONE, grayish orange and light gray, fine	HAAAAA	

HOLE No. PH3-5-00

Washington State
Department of Transportation

PROJECT SR395 North Spokane Corridor Project Sheet 6 of 6
Job No. XL0715

Depth (ft)	Meters (m)	Profile	20	Rock Q Design (%	ation	80	% Rec. FPF	Rock Strength	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
	-30	× × × × × × × × × × × × × × × × × × ×		I I]]	 	>12					grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc)	-	
100-	-30			1	1 1	 						BASALT, dark gray and grayish orange, highly weathered, moderately strong rock (R3). Discontinuities are close to very closely spaced, and in very poor condition. (Mv)		
	-31		 	1 1 1	 		_60_	R1		RUN 13		Basalt BRECCIA, dark grey and yellowish orange, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in very poor condition. Hard clay matrix. (Mv) (RQD=0)	-	
105-	-32					1	100 2	R1		RUN 14		Basalt BRECCIA, dark grey and yellowish orange, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in very poor	-	
-	•5			 	 	i 	<u>95</u> 7	R1		RUN 15		condition. Hard clay matrix. (Mv)		
110	-33			 	 							Basalt BRECCIA, dark grey and yellowish orange, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in very poor condition. Hard clay matrix. (Mv)		
-	-34						100	R4		RUN 16				
115-	-35											BASALT, dark gray, fine grained, fresh, strong rock (R4). Discontinuities are moderately spaced, and in excellent condition. (Mv)		
-							100	R4	F	RUN 17		DASALT ded one for a second to		
	-36										- 1	BASALT, dark gray, fine grained, fresh, strong rock (R4). Discontinuities are moderately spaced, and in excellent condition. (Mv)	AAAA	
120-			1	1 									-	
L	37		_1	1										

Washington State
Department of Transportation

PH	OJECI			Spokan shington							Job No. XL0715 S.R. 395		
Sta	tion _	327	+80.924				C	Offset	197.	87	C.S		
Equ	uipment	Mor	ooka MS	ST-1100			C	Casing			Ground El 2237.3 (681.93 m)		
Met	hod of I	Boring	HWT/I	HQ Casir	ng Adva	nce							
Star	rt Date	Dece	mber 7, 2	2000			Com	pletion	n Date	December 7, 2000	Sheet <u>1</u> of <u>9</u>		
Depth (ft)	Meters (m)	Profile	10	Standard Penetration Blows/ft	40	SPT Blows/6* (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	D	escription of Material	Groundwater	Instrument
	-	000	1	I I I I	1 1 1					SILT with sand and s very dark grayish bro roots	cattered subangular basalt gravel, wn, moist, homogeneous, grass	-	I
5-					 	41 45 50/5*	X	D-1		Silty basalt GRAVEL moist. (Qmw)	with cobbles, very dense, dark gray,		
10	-3					7 13 20 (33)	X	D-2		Basalt BOULDERS ar (Qmw)	nd COBBLES, dark gray, moist.	- - - - -	
15-		0000				13 10 12 (22)	X	D-3		Basalt BOULDERS an (based on Drilling action	nd COBBLES. (Qmw) on no soil in sampler)		
-	6		 		1					Fat CLAY, stiff, light gr	ay and light red, moist. (Mc)		

HOLE No. PH3-6A-00

I:PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/23/01-10:42:17 A5

SOIL

Washington State
Department of Transportation

Figure A-11 Page (2 of 9)

Sheet 2 of 9 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Sample Type Standard Groundwater Sample No. (Tube No.) Meters (m) € SPT Profile Tests Penetration Depth Lab Blows/6 Description of Material Blows/ft (N) 10 20 30 40 U-1 23 Cobble with coating of clay D-4 31 30 (61) Well graded SAND with gravel, medium dense, subangular, dark gray, moist. (Mc) 25 U-2 D-5 8 10 1-in bed of Fat CLAY, stiff, light gray streaked red, moist (15)30 U-3 SILT with sand, medium stiff, light gray, moist, laminated, 3 D-6 3 10 no HCL reaction. (Mc) AL (NP) GS (7) MC = 3335 U-4 D-7 Sandy SILT, stiff, light gray and light brownish gray, red, 6 moist, disrupted laminations, no HCL reaction. (Mc) GS 5 (11)MC = 29 AL 12 40 D-8 Well graded SAND, subrounded to subangular, dense, 26 13 22 moist, homogeneous, weak HCL reaction. (Mc) 18 (40)

HOLE No. PH3-6A-00

Washington State Department of Transportation

Figure A-11 Page (3 of 9)

of

PROJECT SR395 North Spokane Corridor Project

Sheet 3 Job No. XL0715

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft 10 20 30 40	SPT Blows/6* (N)	Sample Type	(Tube No.)	Lab	Description of Material	Groundwater	Instrument
	-14			8 9 13 (22)	Y	D-9	GS MC = 18 AL	Fat CLAY with scattered sand and basalt gravel, very stiff, light gray and red, moist, disrupted laminations, no HCL reaction. (Mc)	-	NECESSARIES SE S
50	-15 -16			6 7 10 (17)) Al	0-10 UN 2	GS MC = 30 AL	SILT with gravel, very stiff, dark greenish gray streaked light gray, moist, disrupted laminations, weak HCL reaction. (Mc)		
55	-17			5 7 4 (11)	RU	- 1	AL (NP) GS MC = 18	Gravelly SILT, stiff, brown, moist, no HCL reaction. (Mc)		
60-	-19			5 7 11 (18)	RUI D-	N 5 12		Fat CLAY, very stiff, moist, light gray and brownish yellow, laminated, disrupted. (Mc) Soil drilling halted due to rock. Log continues on following page.		XXXXXX
65-	-20								.	
70	-21								_	

Washington State
Department of Transportation

Figure A-11 Page (4 of 9)

но	LE No.	PH	8-6 A-0 0								•	
PR	OJECT	SR3	95 North Spokane Co	orridor Pro	ect				Job No. XL0715			
		Spok	ane, Washington						S.R. 395			
Sta	ition	327	+80.924			Offs	set -1	197.87	C.S			
Fai	 uipment	Moi										٠
					 i	Jas	y		Ground El 2237.3 (681.93 m)			t.
	thod of B	•	HWT/HQ Casing A	dvance								
Sta	rt Date	Dece	ember 7, 2000		Cor	nple	etion Dat		cember 7, 2000 Sheet 4 of 9	т	т—	_
Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60	% Rec FPF		Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Inemiment	msnoment
65-	— 19 —20	X X X X X X X X X X X X X X X X X X X							SILTSTONE, grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding, and in poor to fair condition. (Mc)		THE STATE ST	BYSKRYKYKYKYKYKYKYKYKYKYKYKY
70 —	21	x x x x x x x x x x x x x x x x x x x		100 2	RI		RUN 6		SILTSTONE, grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding, and in poor to fair condition. (Mc)		KKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKK	KKKKKKKKK
	-22	x x x x x x x x x x x x x x x x x x x		100 4	R1	_	RUN 7		SILTSTONE, grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are close to moderately spaced as partings along			
75-	-23	× × × × × × × × × × × × × × × × × × ×		100 2	R1		RUN 8		bedding, and in poor to fair condition. (Mc)		XXXXXX	XXXXXX
80-	-24	× × × × × × × × × × × × × × × × × × ×							SILTSTONE, grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are close to moderately spaced as partings along bedding, and in poor to fair condition. (Mc)		**************************************	
4		× × × × × × × × × × × × × × × × × × ×		100 2	R1	H	RUN 9			- {	X	XX

HOLE No. PH3-6A-00

5/22/01•2:49:30 P5

ROCKN I:/PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT

Washington State
Department of Transportation

Sheet 5 of 9 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Test Data & Blows/6*/SPT (N) **Rock Quality** Sample Type Meters (m) Sample No. £ Strength Instrument Designation Rock Depth Rec. **Description of Material** (%) FPF 40 60 80 25 SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are close to moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in very poor condition. (Mc) 85 26 100 Ri **RUN 10** SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor to fair condition. (Mc) 90 R1 RUN 11 100 28 SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor to fair condition. (Mc) 95 -29 100 R1 **RUN 12** SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor to fair condition. (Mc) 100 100 R1 **RUN 13** SILTSTONE, grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are very closely spaced as partings along bedding, and in fair condition. (Mc) 105 100 10

PH3-6A-00

HOLE No.

ROCKN 1:PROJECT244\006\WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:49:31 PS

Washington State Department of Transportation

Sheet 6 of

SR395 North Spokane Corridor Project PROJECT XL0715 Job No. Test Data & Blows/6*/SPT (N) **Rock Quality** Ê Sample Type Sample No. Instrument Depth (ft) Designation Meters Rec. Description of Material (%) FPF 60 40 80 SILTSTONE, grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are very close to closely spaced as partings along bedding, and in fair condition. (Mc) 110 R1 **RUN 15** 100 SILTSTONE, grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding, and in fair condition. (Mc) 115-R1 **RUN 16** 100 SILTSTONE, grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding, and in good condition. 120 **RUN 17** R1 100 37 CLAYSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are close to very closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in good 125 condition. (Mc) 100 **RUN 18** R1 CLAYSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in fair condition. (Mc) (RQD=0) 130

100

R1

Washington State
Department of Transportation

HOLE No. PH3-6A-00

PROJECT SR395 North Spokane Corridor Project

Sheet 7 of 9 Job No. XL0715

		1	T			Comac	T -	_				Job No. XLU/15		mir
Depth (ft)	Meters (m)	Profile	20	Rock (Design		80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
135 -	-41	X X X X X X X X X X X X X X X X X X X					100 12	R1		RUN 20		CLAYSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are very closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in fair condition. (Mc) (RQD=0)		
140 -	-42	X X X X X X X X X X X X X X X X X X X					100	R1		RUN 21		CLAYSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are very closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. Material contains fossilized leaves. (Mc) (RQD=0)	-	
145—	-44	X X X X X X X X X X X X X X X X X X X										CLAYSTONE, light gray, fine grained, slightly weathered, very weak rock (R1). Discontinuities are close to very closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition with slickensides. (Mc)	_	
150	-45	x x x x x x x x x x x x x x x x x x x		I I I I I	, 	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	90 7	R1		RUN 22		SILTSTONE, dark yellowish brown, fine grained, slightly weathered, very weak rock. Discontinuities are very close as partings along bedding at 0 to 3 degrees to horizontal, and in poor to very poor conditions with slickensides. Two fractures at 15 to 18 degrees to horizontal. (Mc) (RQD=0)	XXXXX	
155 —	-47						100 2	R1		RUN 23		SILTSTONE, dark yellowish brown, fine grained slightly weathered, very weak rock. Discontinuities are close to very closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor to very poor condition. (Mc)	XXXXXXXXXXXXX	

HOLE No. PH3-6A-00

Washington State
Department of Transportation

Figure A-11 Page (8 of 9)

Sheet <u>8</u> of <u>9</u>
Job No. <u>XL0715</u>

PROJECT SR395 North Spokane Corridor Project

Depth (ft)	Meters (m)	Profile	2		Rock Q Design (%	ation	80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
160 —	-48 -49	X X X X X X X X X X X X X X X X X X X		 				100	R1		RUN 25		SILTSTONE, dark yellowish brown, fine grained slightly weathered, very weak rock. Discontinuities are close to very closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor to very poor condition. (Mc) (RQD=0)		
165-	-50	X X X X X X X X X X X X X X X X X X X		 				12	R1		RUN 26		SILTSTONE, dark yellowish brown, fine grained slightly weathered, very weak rock. Discontinuities are close to very closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor to very poor condition. (Mc) (RQD=0)		
170-	— 51 -	X X X X X X X X X X X X X X X X X X X		 				10	Ni		AUN 26		SILTSTONE, dark yellowish brown, fine grained slightly weathered, very weak rock. Discontinuities are close to very closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor to very poor condition with disturbed bedding. (Mc) (RQD=0)	-	
	-52 - -53	X	 		 			100	Rí		RUN 27		CLAYSTONE, olive gray and light olive gray, fine grained, slightly weathered, very weak rock. Discontinuities are closely spaced as partings along		
175—	0 1	X						100	R1		RUN 28		disturbed bedding at 3 degrees to horizontal, and in poor condition. (Mc) (RQD=0)		
180-	55	x x x x x x x x x x x x x x x x x x x						40 8	R1		RUN 29		CLAYSTONE, olive gray and light olive gray, fine grained, slightly weathered, very weak rock. Discontinuities are moderately spaced, and in poor condition with slickensides and disturbed bedding. (Mc)		

HOLE No. **PH3-6A-00**

Washington State
Department of Transportation

PROJECT SR395 North Spokane Corridor Project

Sheet 9 of 9 Job No. XL0715

	OJECT			ПОРО	itane	Ooma	or Proje	CL		-	-		Job NoXL0715	
Depth (ft)	Meters (m)	Profile	20	Desig	Quality mation %)	80	% Rec. FPF	Rock	Strength	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Instrument
185—	-56	X X X X X X X X X X X X X X X X X X X					100	R	4		RUN 30		CLAYSTONE, yellowish orange and grayish orange and dusky yellow, fine grained, slightly weathered, very weak rock (R1). Discontinuities are very closely spaced as fractures at 7 to 8 degrees to horizontal, and in poor to very poor condition with disturbed bedding and iron oxide in soft gouge. (Mc) (RQD=0)	
190	- 57						4						BASALT, dark gray, fine grained, fresh, strong rock (R4). Discontinuities are closely spaced, and in good condition. (Mv)	
195—	59				!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!		100 3	R4			RUN 31		BASALT, dark gray, fine grained, fresh, strong rock (R4). Discontinuities are closely spaced, and in fair to good condition. (Mv)	
-	-60			 		 - - -							Y	***
200-	-61			 										
205	-62		 - - -			 								
	63		 	 	 									

Washington State
Department of Transportation

Figure A-12 Page (1 of 10)

	Spokane, W	th Spokane Corridashington					Job No. XL0715 S.R. 395	
Station _	328+96.30	9		c	Offset	195.1	2 C.S	
Equipment	Morooka M	MST-1100		С	asing		Ground El (683.06 m)	
Method of E	Boring HW	Г/HQ Casing Adva	nce					
Start Date	December 1	2, 2000		Com	pletion	Date	December 16, 2000 Sheet1 of10	
Meters (m)	Profile	Standard Penetration Blows/ft 20 30 40	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab	Description of Material	Groundwater
	7 3 4 1 1			Н			SILT with sand and scattered subangular basalt gravel, very dark grayish brown, moist, homogeneous, grass	
1	0000	1 1 1					roots	1
52			36 35 30 (65)	X	D-1		Basalt BOULDERS and COBBLES. (Qmw) (no recovery, based on drilling action)	
03			12 10 16 (26)	X	D-2		Poorly graded medium SAND, rounded, medium dense, yellowish red, moist, stratified, no HCL reaction, arkosic sand, (Mc)	
5			6 50/5•	Z X	U-1 D-3	GS MC = 33 AL	Sandy SILT, micaceous, stiff, yellowish red and pinkish white, moist, stratified, (Mc)	

HOLE No. PH3-6B-00

IAPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/23/01+10:56:49 A5

Washington State
Department of Transportation

Sheet 2 of 10 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Sample Type Standard Groundwater Meters (m) Sample No. SPT (Tube No.) Depth (ft) Tests Penetration Lab Blows/6 Description of Material Blows/ft (N) 8 Lean CLAY, very stiff, light gray and yellowish red, moist, 13 laminated, (Mc) 15 (28)25 U-2 GS MC = 34 AL Lean CLAY, stiff, light gray, moist, homogeneous, no 4 HCL reaction, (Mc) 6 (10) 30 U-3 Lean CLAY, very hard, light gray, moist (Mc) 50/0* D-6 10 35 D-7 Elastic SILT, very stiff, olive yellow and light gray, moist, 8 micaceous, laminated, no HCL reaction (Mc) GS 12 (20)MC = 40AL 40 D-8 SILT, very stiff, very dark grayish brown, moist, 13 8 laminated, no HCL reaction (Mc) 10 AL (NP) (18)GS

Washington State
Department of Transportation

Figure A-12 Page (3 of 10)

HOLE No. PH3-6B-00

PROJECT SR395 North Spokane Corridor Project

Sheet 3 of 10 Job No. XL0715

1110	JECT		95 NOITI										Job NoXLU/15	_	
Depth (ft)	Meters (m)	Profile	10	Stand Penetra Blows	ation s/ft	40	SPT Blows/6* (N)	Sample Type	Sample No.	(Tube No.)	Ę	Tests	Description of Material	Groundwater	Instrument
-	14			•			6 9 15 (24)	X	D. RU				SILT, very stiff, very dark grayish brown, moist, no HCL reaction (Mc)	_	222222
-	15		; ;										SILT, very stiff, very dark grayish brown, moist (Mc)	-	
50 -	-	× × × × × × × × ×											SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding, and in fair condition. (Mc) Soil drilling halted due to rock. Log continues on following page.	-	
	16		 											-	
55	17				 	· 									
60-	- 18		; 		 									-	
	-19		 	 	 	 							•	-	
65-	s.		 	 	 	 									
65	-20					 									
70	-21			 											

Washington State
Department of Transportation

н	DLE No.	PH3-6B-00						Department of Harispo	lan	on	
PF	ROJECT	SR395 North Spo	okane Corrido	r Proje	ct			Job NoXL0715			
		Spokane, Washing	gton					S.R. 395			_
Sta	ation _	328+96.309			C	Offset	195.12	C.S	_		=
Eq	uipment	Morooka MST-1	100		C	asing _		Ground El		_	_
Me	thod of B	oring HWT/HQ C	Casing Advanc	се							
Sta	art Date	December 12, 2000)		Com	pletion D	ate <u>De</u>	cember 16, 2000 Sheet 4 of 10			
Depth (ft)	Meters (m)	Desig	Quality gnation %) 60 80	% Rec. FPF	Rock	Sample Type Sample No.	Test Data & Blows/67/SPT (N)	Description of Material	Groundwater	18 16 18	Instrument
55-	-17	X X X X X X X X X X X X X X X X X X X		100 1	R1	RUN:	2	SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding, and in fair condition. (Mc)		HEREFER HEREFERST STATES AND	KKKKKKKKKKKKKKKKKKKK
60 —	- 18	X X X X X X X X X X X X X X X X X X X						SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding, and in fair to poor condition. (Mc)	7		
65 —	— 19 —20	: × ×{ <i>//////////////////////////////////</i>		100 1	R1	RUN 4		SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding, and in fair condition. (Mc)	-5		**************************************
70 —	-21 × × × × × × × × × × × × × × × × × × ×	x x x x x x x x x x x x x x x x x x x						SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding, and in fair condition. (Mc)	KKKKKKKKK	XXXXXXX	KARAKARAKARA

PH3-6B-00

Washington State
Department of Transportation

Figure A-12 Page (5 of 10)

Sheet 5 of 10 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

HOLE No.

PR	OJECT	Sha	95 North Spokane Corri	dor Projec	CI				Job No. XL0715		
Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
	-22	X X X X X X X X X X X X X X X X X X X		100	R1		RUN 6		SILTSTONE, very dark grayish brown, fine grained,	-	
75 -	-23	* * * * * * * * * * * * * * * * * * *		100	R1		RUN 7		slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding, and in fair condition. (Mc)	-	
	-24	× × × × × × × × × × × × × × × × × × ×							SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding, and in poor condition. (Mc)		
80	- 25	X X X X X X X X X X X X X X X X X X X		100	R1		RUN 8				
85 —	26	X X X X X X X X X X X X X X X X X X X		100	R1		RUN 9		SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding, and in fair condition. (Mc)		
	- 27	(XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		3					03/15/2001 SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding, and in poor condition. (Mc)	_ 	
90-	-28	x x		100	R1		RUN 10			-	
95—	-29	x x x x x x x x x x x x x x x x x x x							SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding, and in fair to poor condition. (Mc)		

HOLE No. PH3-6B-00

ROCKN I:PROJECT244(006)WSDOTPH3.GPJ WSDOT,GDT 5/22/01-2:50:05 P5

Washington State
Department of Transportation

Sheet 6 of 10 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

PR	OJECT	_ SH3:	JON CE	n Spo	kane (orrido	r Proje	Cī				Job NoXL0715	_	
Depth (ft)	Meters (m)	Profile	20	Desig	Quality mation %)	80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
100-	-30	X X X X X X X X X X X X X X X X X X X					100 4	RI		RUN 11		SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as partings along bedding, and in fair condition. (Mc) Note: Some organic material at 98 ft		KENERAKKEKEN KANDER KENERAKKEKEN KANDER KENERAKKEN KANDER KANDER KENERAKKEN KANDAKKEN KENERAKKEN KA
105-	- 32	X X X X X X X X X X X X X X X X X X X				·	95 4	R1		RUN 13		SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding, and in fair to poor condition. (Mc) (RQD=0)		
110-		x x x x x x x x x x x x x x x x x x x			 			The second second second				SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding, and in fair to poor condition. (Mc) (RQD=0)		RESERVERSE
-	-34	x x x x x x x x x x x x x x x x x x x	-		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		100	R1		RUN 14		SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1).		
115	-35	× × × × × × × × × × × × × × × × × × ×					100	R1	F	RUN 15		Discontinuities are closely spaced as partings along bedding, and in fair to poor condition. (Mc)		
120	-36	X X X X X X X X X X X X X X X X X X X			 							SILTSTONE, very dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding, and in fair to poor condition. (Mc)	XXXXXX	SKKKKKKKKK KKKKKKKKKKKKKKKKKKKKKKKKKKK

HOLE No. PH3-6B-00

Washington State
Department of Transportation

Sheet 7 of 10 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
	-37	* * * * * * * * * * * * * * * * * * *		100	R1		RUN 16		CLAYSTONE, light gray, fine grained, slightly		
125 —	38 	× × × × × × × × × × × × × × × × × × ×		100	R1		RUN 17		weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) (RQD=0)	- -	
-	—39 -	x x x x x x x x x x x x x x x x x x x							CLAYSTONE, light gray, fine grained, slightly weathered, very weak rock (R1). Discontinuities are very closely spaced, and in poor condition. Vertical fractures, brittle. (Mc) (RQD=0)		8
130 —	40	X X X X X X X X X X X X X X X X X X X		100	R1		RUN 18				
135	– 41	x x x x x x x x x x x x x x x x x x x							CLAYSTONE, light gray, fine grained, slightly weathered, very weak rock (R1). Discontinuities are very closely spaced, and in fair to poor condition. (Mc) (RQD=0)		
	- -42	X X X X X X X X X X X X X X X X X X X		95 2	R1		RUN 19			-	
140		X X X X X X X X X X X X X X X X X X X							SILTSTONE, brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced, and in fair to poor condition. (Mc)	-	
	-43 -	**************************************		95	R1		RUN 20		SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced, and in fair condition. (Mc)		
145		X X X X X X X X X X X X								- }	

HOLE No. PH3-6B-00

ROCKN I:PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01*2:50:07 PS

Washington State
Department of Transportation

Sheet <u>8</u> of <u>10</u> Job No. <u>XL0715</u>

PROJECT SR395 North Spokane Corridor Project

Test Data & Blows/6*/SPT (N) **Rock Quality** Meters (m) Sample No. £ % Profile Strength Depth (Designation Rec. Description of Material (%) FPF **RUN 21** 100 R1 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in fair condition. (Mc) 150 R1 RUN 22 100 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in fair condition. (Mc) (RQD=0) 155 **RUN 23** R1 100 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in fair condition. (Mc) (RQD=0) 160 100 R1 **RUN 24** SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in fair condition. (Mc) 50 165 **RUN 25** R1 100 51 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in fair condition. (Mc) (RQD=0)

HOLE No. PH3-6B-00

ROCKN I:\PROJECT\244\006\WSDOTPH3.GPJ WSDOT.GDT 5/22/01*2:50:08 PS

Washington State
Department of Transportation

Sheet 9 of 10 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Test Data & Blows/6*/SPT (N) **Rock Quality** $\widehat{\mathbf{E}}$ Sample No. £ Designation Depth Rec. Description of Material (%) **FPF** 20 40 60 100 **RUN 26** SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in fair condition. (Mc) (RQD=0) 175 88 R1 **RUN 27** SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in fair condition. (Mc) 180 55 100 R4 **RUN 28** BASALT, dark gray, fine grained, fresh to slightly weathered, strong rock (R4). Discontinuities are closely spaced, and in poor to very poor condition. ΔΔ ΔΔ 185 ΔΔ ΔΔ ΔΔ 80 R2 **RUN 29** Basalt BRECCIA, medium dark gray, fine grained, ΔΔ fresh to slightly weathered, moderately weak to ΔΔ strong rock (R2). Discontinuities are closely spaced, ΔΔ and in very poor condition. (Mv) ΔΔ Δ ΔΔ ΔΔ ΔΔ Note: Slickensides with horizontal striations in vertical fractures at 189.8 ft, smeared serpentine. 190 58 75 3 **RUN 30** R4 BASALT, medium dark gray, fine grained, fresh, hard rock (R4). Discontinuities are close to very closely spaced, and in good to fair condition. (Mv) 195

Washington State
Department of Transportation

HOLE No. **PH3-6B-00**

PROJECT SR395 North Spokane Corridor Project

Sheet 10 of 10 Job No. XL0715

Depth (ft)	Meters (m)	Profile		Rock Qu Designa (%)	ation	80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/67/SPT (N)	Description of Material	Groundwater	Instrument
-	60						100	R4		RUN 31		BASALT, medium dark gray, fine grained, fresh, hard rock (R4). Discontinuities are moderately spaced, and in excellent condition. (Mv)		
200-	61			 	 - - -	——————————————————————————————————————								
205-	62		+										- - -	
	-63		 		 	 							-	
210	— 64 -		 		 							;-		
215	65				 									
	-66			 										
220	-67				 									

Washington State
Department of Transportation

		Spoka	ne, Wa	ashingto	n					S.R. 395		
Sta	ion _	331+	00.923	3			c	Offset	6.39	C.S		
Equ	ipment	More	ooka M	IST-1100		-	c	asing		Ground El	<u>n)</u>	_
Met	hod of E	Boring	HWT	/HQ Cas	ng Adva	nce						
Sta	t Date	Decer	nber 1,	2000			Corr	pletion	Date	December 6, 2000 Sheet 1 of 10	_	Τ
(a) map	Meters (m)	Profile	10	Standard Penetration Blows/ft	on	SPT Blows/6* (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	
-		7. 7.7 7. 7.7 7. 7.7	1							SILT with sand and scattered subangular basalt gravel, very dark grayish brown, moist, homogeneous, grass roots	-	1
	-1		1] 							
5 -	-2		1 1 1 1 1 1		 	10 12 13 (25)	X	D-1		Poorly graded SAND with gravel, subangular, dense, light brown, moist, homogeneous, no HCL reaction. (Qmw)		TARARARARA TARARARA
)—	-3		1 1 1 1 1 1			6 7 9 (16)	X	D-2		Poorly graded fine to medium SAND, rounded, medium dense, light gray, moist, homogeneous, no HCL reaction, (Completely weathered sandstone). (Mc)		XXX
;	-4		 			20	Y	D-3		Poorly graded SAND, rounded, very dense, reddish yellow, moist, homogeneous, no HCL reaction, iron oxide, (completely weathered sandstone). (Mc)	-	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
	-5		 			(55)	•			(completely weathered statustoney, (we)		CXXXX

PH3-7-00 HOLE No.

I:PROJECT244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01+2:25:40 PS

SOIL

Washington State Department of Transportation

Sheet 2 of

SR395 North Spokane Corridor Project PROJECT

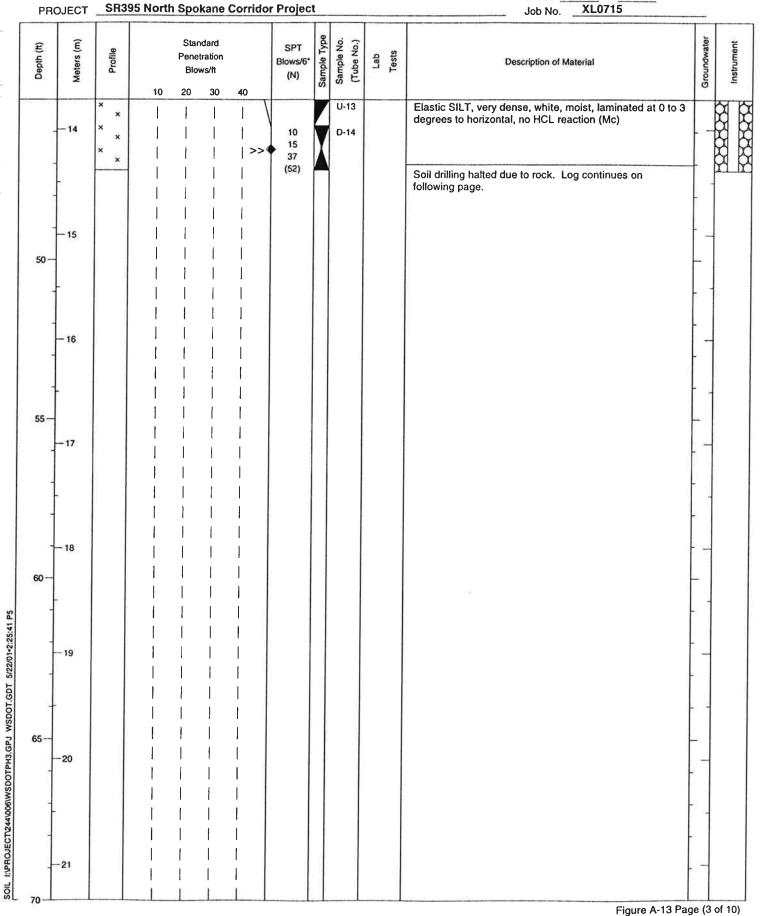
XL0715 Job No. Sample Type Standard Sample No. E Meters (m) SPT (Tube No.) Instrument Penetration Tests Lab Blows/6 **Description of Material** Blows/ft (N) 20 30 Poorly graded SAND, rounded, dense, light gray streaked 14 reddish yellow, moist, laminated at approximately 0 to 3 17 degrees to horizontal, no HCL reaction, (completely (31)weathered sandstone). (Mc) 25 U-5 Silty SAND, dense, light gray, moist, laminated at 0 to 3 degrees to horizontal, no HCL reaction, scattered iron 10 D-6 oxide, (completely weathered sandstone). (Mc) 16 27 (43)30 Fat CLAY, hard, white, moist, homogeneous, no HCL D-8 reaction, potential for slaking (Mc) 12 13 Note: Drill was relocated 5 ft to the east, due to loss of (25)shelby sample tube at 37 ft 10 35 U-9 Fat CLAY, very stiff, white, moist, bedded to laminated, no HCL reaction (Mc) D-10 (14)12 40 U-11 Elastic SILT, hard, light gray, moist, laminated, no HCL reaction (Mc) D-12 15 (38)13

Washington State Department of Transportation

PH3-7-00

HOLE No.

3 Sheet of XL0715



Washington State
Department of Transportation

Н	IOLE No.	PH3-7-	-00								Department of Transp	onai	1011	
Р	ROJECT	SR395 N	North Spo	kane Corr	idor Proj	ect			-		Job No. XL0715			
		Spokane	, Washing	gton			_			***************************************	S.R. <u>395</u>			e (
S	tation _	331+00	.923			_ (Offs	et _	5.39		C.S		-	er.
E	quipment	Morool	ca MST-11	100		_ (Cas	ing _			Ground El 22474.7 (6850.29 I	n)		5
M	lethod of E	Boring <u></u>	WT/HQ C	asing Adv	rance									
S	tart Date	Decembe	er 1, 2000			Соп	nple	etion D		cember 6, 2000	Sheet4 of10			
Depth (ft)	Meters (m)	Profile	Rock (Design (%	nation	% Rec. FPF		Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)		Description of Material	Groundwater	Instrument	monnen.
50	-15	X X X X X X X X X X X X X X X X X X X			100 2	R1		RUN 2		very weak rock (F Discontinuities are	nite, fine grained, slightly weathered, R1), potential for slaking. e moderately spaced as parting 0 to 3 degrees to horizontal, and in on (Mc)	-	SKKKKKKKKKK	000000000000000000000000000000000000000
55	-16	* * * X								weathered, very was Discontinuities are along bedding at 6	c brown, fine grained, slightly veak rock (R1), potential for slaking. e moderately spaced as partings 0 to 3 degrees to horizontal, and in on, slickensided (Mc)	- - - -	STATES ST	
7.GDT 5/22/01*2:50:38 P5	18	× × × × × × × × × × × × × × × × × × ×			100	R1		RUN 3		weathered, very w	t brown, fine grained, slightly yeak rock (R1), potential for slaking. e closely spaced as partings along degrees to horizontal, and in poor sided (Mc)		CASAS CASAS CASAS	
FOCUM 1:4*NOBIWSDOTPH3:GPJ WSDOT.GDT \$/22/01-2:50:38 PS	19	X X X X X X X X X X X X X X X X X X X			85 2 100 2	R1		D-15 RUN 4	8 14 50/5*	weathered, very w Discontinuities are along bedding at 0	brown, fine grained, slightly leak rock (R1), potential for slaking. In moderately spaced as partings It to 3 degrees to horizontal, and in In, slickensided (Mc)			

Washington State
Department of Transportation

HOLE No. PH3-7-00

ROCKN I:\PROJECT\244\006\WSDOTPH3.GPJ WSDOT.GDT 5/22/01+2:50:40 P5

Sheet <u>5</u> of <u>10</u> Job No. <u>XL0715</u>

PROJECT SR395 North Spokane Corridor Project

Test Data & Blows/6*/SPT (N) Rock Quality Sample Type Groundwater Sample No. Meters (m) £ % Strength Depth (Designation Rock Rec. Description of Material (%) FPF SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in very poor condition. (Mc) 70 100 R1 **RUN 6** 22 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in very poor condition. (Mc) 75 23 RUN 7 R1 80 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are close to very closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in very poor condition. (Mc) 80 Note: Material from 81.3 to 82.8 ft is brittle, diced texture RUN 8 R1 70 12 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) 85 26 R1 RUN 9 100 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) 90 R1 **RUN 10** 96

Washington State
Department of Transportation

HOLE No. PH3-7-00

PROJECT _SR395 North Spokane Corridor Project

Sheet 6 of 10 Job No. XL0715

Depth (ft) Meters (m)	Rock Q Design (%	ation Rec		Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
95 29	X X X X X X X X X X X X X X X X X X X	94	. R1		RUN 11		SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are close to very closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. Slickensides at 80 to 90 degrees. (Mc)		***************************************
100 —	x x x x x x x x x x x x x x x x x x x		R1		RUN 12		SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are very closely spaced as partings along bedding at 0 to 5 degrees to horizontal, and in very poor condition. Fractures at 60 to 90 degrees to horizontal. (Mc)		
105 32	x x x x x x x x x x x x x x x x x x x	5	Rí		RUN 13		SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are very closely spaced as partings along bedding at 0 to 5 degrees to horizontal, and in very poor condition. Fractures at 60 to 90 degrees to horizontal. (Mc) (RQD=0) 03/15/2001	- □ □	
-33	X X X X X X X X X X X X X X X X X X X	2	Ri		RUN 14		SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in very poor condition, slickensided. Widely spaced fractures at 60 to 90 degrees to horizontal. (Mc)		~ ~
-35							SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in very poor condition. (Mc)		

Washington State Department of Transportation

PH3-7-00 HOLE No.

ROCKN I:PROJECT244(006)WSDOTPH3.GPJ WSDOT.GDT 5/22/01+2:50:42 PS

Sheet 7 of

SR395 North Spokane Corridor Project XL0715 **PROJECT** Job No. Test Data & Blows/6"/SPT (N) Sample Type **Rock Quality** Sample No. Depth (ft) Meters (m) % Strength Rock Designation Rec. Description of Material (%) FPF 40 60 36 SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are very closely spaced as partings along bedding at 0 to 5 degrees to horizontal, and in very poor condition. Fractures at 120 60 to 90 degrees to horizontal. (Mc) **RUN 16** R1 74 SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are very closely spaced as partings along bedding at 0 to 5 degrees to horizontal, and in very poor condition. Fractures at 125 60 to 90 degrees to horizontal. (Mc) 100 R1 **RUN 17** SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are very closely spaced as partings along bedding at 0 to 5 degrees to horizontal, and in very poor condition. Fractures at 130 60 to 90 degrees to horizontal. (Mc) R1 **RUN 18** 94 10 CLAYSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are close to very closely spaced as partings along bedding at 0 to 7 degrees to horizontal, and in very poor condition. (Mc) 135 R1 **RUN 19** 92 Note: Old soil horizon at 138.5 ft SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced, and in poor condition. (Mc) 140 R1 **RUN 20** 94

HOLE No. PH3-7-00

Washington State
Department of Transportation

Sheet 8 of 10 Job No. XL0715

PROJECT _SR395 North Spokane Corridor Project

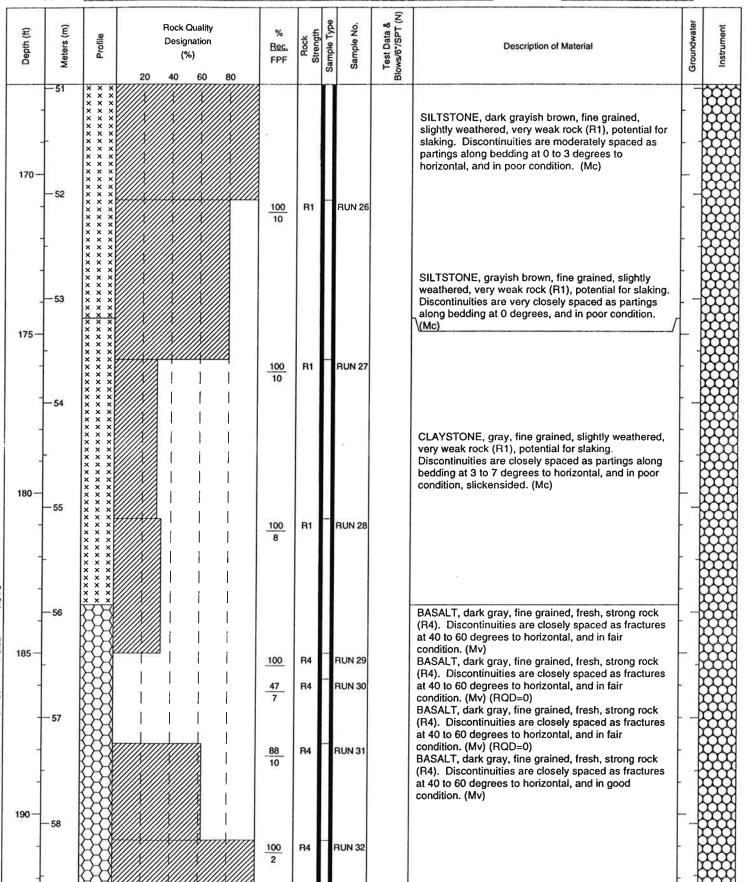
	ECT _	T	5 North Spokane Corrid	T	Г	T		2	Job No. XL0715		
Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	35
145	**************************************	* * * * * * * * * * * * * * * * * * *							Note: Old soil horizon at 142.5 ft, scattered organics CLAYSTONE, light gray, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 5 degrees to horizontal, and in poor condition, slickensided. (Mc)	-	X
-4	45 × × × × × × × × × × × × × × × × × × ×	X		80 6	R1		RUN 21		SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along		
150	46 × × × × × × × × × × × × × × × × × × ×	× × × × × × × × × × × × × × × × × × ×		100 2	R1		RUN 22		bedding at 0 to 3 degrees to horizontal. (Mc)		
155—	47 × × × × × × × × × × × × × × × × × × ×	*****		94	R1		RUN 23		SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc)		
160		X X X X X X X X X X X X X X X X X X X		1					SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc)		
-49	9 × × × × × × × × × × × × × × × × × × ×	× × × × × × × × × × × × × × × × × × ×		100	R1		RUN 24		SILTSTONE, dark grayish brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to	ARRARA A	
165	× × × × × ×	× × × × × × × × × × × × × × × × × × ×		100	R1		RUN 25		horizontal, and in poor condition. (Mc) (RQD=0)		



PH3-7-00 HOLE No.

\$R395 North Spokane Corridor Project PROJECT

9 XL0715 Job No.



Washington State
Department of Transportation

HOLE No. PH3-7-00

PROJECT SR395 North Spokane Corridor Project

Sheet 10 of 10 Job No. XL0715

Depth (ft)	Meters (m)	Profile	Rock C Design (% 20 40	nation	% Bec. FPF	Rock Strength	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
195 —	59									BASALT, dark gray, fine grained, fresh, strong rock (R4). Discontinuities are closely spaced as fractures at 40 to 60 degrees to horizontal, and in good condition. (Mv)		
	60										- -	
200 —	61											
-	- 62											
205	-63		 									
210	-64											
-	-65											
215-	-66											

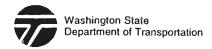
Washington State
Department of Transportation

Figure A-14 Page (1 of 8)

	но	LE No.	PH3-	-8A-00							Department of Transpo	ortati	on	
	PR	OJECT	SR39	5 North Spok	ane Corrid	ior Project	<u> </u>				Job No. XL0715			
			Spoka	ne, Washingt	on						S.R. 395			
	Sta	ition _	334+	03.679			c	Offset	-117.9	91	C.S			
	Eq	uipment	More	ooka MST-110	00		C	Casing			Ground El 2219.7 (676.56 m)			
6	Me	thod of E	Boring	HWT/HQ Ca	sing Adva	ince								
	Sta	rt Date	Nover	nber 9, 2000		(Con	pletion	Date	November 9, 2000	Sheet1_ of8			-00
	Depth (ft)	Meters (m)	Profile	Stand Penetra Blows	ation	SPT Blows/6* (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	į	Description of Material	Groundwater	Instrument	
			76.71	1 1	1 1					Silty SAND with grad HCL reaction	ss roots, loose, dark brown, moist, no	-		
	5	-1				8 6 8 (14)	X	D-1		Poorly graded SANI moist, homogeneous weathered sandston	D, rounded, medium dense, dark gray, s, no HCL reaction, (completely ne). (Mc)	-		0000000000
4:51 PS	10-	-3				17 18 29 (47)	X	D-2		Poorly graded SANE brown, moist, homog (completely weather	O with gravel, rounded, dense, light geneous, no HCL reaction, red sandstone). (Mc)			1
SOIL INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01-5:54:51 PS	15—	4 				13 7 15 (22)	X	D-3		brown, wet, homoge weathered sandston SILT, yellow, wet, lai	D, rounded, medium dense, light specus, no HCL reaction (completely e). (Mc) // minated, no HCL reaction. (Mc) ue to rock. Log continues on			THE PERSON NAMED IN THE PE
SOIL I:PROJECT	- 20			1 1								-		

Washington State
Department of Transportation

HC	DLE No.		3-8A-00	_										
PR	OJECT		195 North S		Corrido						Job No. XL0715			
			cane, Wash	ington							S.R. <u>395</u>			
	ation _		1+03.679			***	Ŋ.	Offse		117.91	C.S			5
	uipment		rooka MST				C	asiı	ng		Ground El 2219.7 (676.56 m)	-		e
	thod of E				g Advanc	ce		_						
Sta	nt Date	Nov	ember 9, 20	00			Com		tion Dat		wember 9, 2000 Sheet 2 of 8	Т	_	_
Depth (ft)	Meters (m)	Profile	D	ock Quality esignation (%) 40 60	80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater		Instrument
38	5 	* * * * * * * * * * * * * * * * * * *		80		60	R1		RUN 1		CLAYSTONE, light gray, fine grained, slightly weathered, very weak rock (R1). Discontinuities	-	KKKKKKKK	KKKKKK
20 –	6 6	**************************************			 	100	Rí		RUN 2		along parted bedding are 0 to 3 degrees to horizontal, closely spaced and in fair condition. (Mc)	-	**************************************	CHANAXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
25 —	7	x x x x x x x x x x x x x x x x x x x				100	R1		RUN 3		CLAYSTONE, light gray, fine grained, slightly weathered, very weak rock (R1). Discontinuities along parted bedding are 0 to 3 degrees to horizontal, very close to widely spaced and in fair condition. (Mc)		SKREKKERK	*******
30	9	x x x x x x x x x x x x x x x x x x x									CLAYSTONE, light gray, fine grained, slightly weathered, very weak rock (R1). Discontinuities along parted bedding are 0 to 3 degrees to horizontal, closely spaced and in fair condition. (Mc)		RESERVED	KANA KANA KANA
25	10	x x x x x x x x x x x x x x x x x x x				100	R1		RUN 4		CLAYSTONE interbedded with greenish gray siltstone, dark brown and brown, fine grained, fresh,		33555555555555555555555555555555555555	******



HOLE No.

ROCKN INPROJECT/244(006)WSDOTPH3.GPJ WSDOT.GDT 5/23/01+11:11:33 A5

PH3-8A-00

PROJECT SR395 North Spokane Corridor Project

Sheet _ **3** of Job No. XL0715

Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock Strength	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
-	-11	* * * * * * * * * * * * * * * * * * *		75	R1		RUN 5		very weak rock (R1). Discontinuities are widely spaced at partings along bedding at 0 to 3 degrees to horizontal and in good condition. (Mc)		
	12	X X X X X X X X X X X X X X X X X X X		100	R1		RUN 6		CLAYSTONE interbedded with greenish gray siltstone, dark brown and brown, fine grained, fresh, very weak rock (R1). Discontinuities are widely spaced at partings along bedding at 0 to 3 degrees to horizontal and in good condition. (Mc) (RQD=0)	-	
40	13	x x x x x x x x x x x x x x x x x x x		100	R1		RUN 7		CLAYSTONE, brown, fine grained, fresh, very weak rock (R1). Discontinuities are widely spaced as partings along bedding at 0 to 8 degrees to horizontal and in good condition. (Mc)		
45 —	— 14	X X X X X X X X X X X X X X X X X X X		100	R1		RUN 8		CLAYSTONE, brown, fine grained, fresh, very weak rock (R1). Discontinuities are widely spaced as partings along bedding at 0 to 8 degrees to horizontal and in good condition. (Mc)		
50-	15	**************************************							CLAYSTONE, brown, fine grained, fresh, very weak rock (R1). Discontinuities are widely spaced as partings along bedding at 0 to 8 degrees to horizontal and in good condition. (Mc)		RESERVATOR
-	- 16	* * * * * * * * * * * * * * * * * * *		100	R1		RUN 9				NAMES OF THE PROPERTY OF THE P
55-	- 17	(100	R1		RUN 10		SILTSTONE, dark grayish brown, fine grained, fresh, weak rock (R1). Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal. (Mc)	R	**************************************
60-	-18	× × × × × × × × × × × × × × × × × × ×							SILTSTONE, dark grayish brown, fine grained, fresh, weak rock (R1). Discontinuities are widely spaced as	-	***************************************

Washington State
Department of Transportation

HOLE No.

PH3-8A-00

PROJECT SR395 North Spokane Corridor Project

Sheet 4 of 8 Job No. XL0715

Depth (ft)	Meters (m)	Profile	Desig	Quality gnation %) 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
	— 19	* * * * * * * * * * * * * * * * * * *			<u>100</u>	Rí		RUN 1		partings along bedding at 0 to 3 degrees to horizontal. (Mc)		
65 —	20	x x x x x x x x x x x x x x x x x x x			100	R1		RUN 12	2	SILTSTONE, dark grayish brown, fine grained, fresh, weak rock (R1). Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal. (Mc)		
70-	21	**************************************								03/15/2001 SILTSTONE, dark grayish brown, fine grained, fresh, weak rock (R1). Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal. (Mc)	- _ V 	
	-22	× × × × × × × × × × × × × × × × × × ×			100	R1		RUN 13	8			
75-	-23	X X X X X X X X X X X X X X X X X X X								SILTSTONE, dark grayish brown, fine grained, fresh, weak rock (R1). Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal. (Mc)	- 8	A1 L 1
	-24	x x x x x x x x x x x x x x x x x x x			100	R1		RUN 14		SILTSTONE, dark grayish brown, fine grained, fresh, weak rock (R1). Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal. (Mc)		
80 —	- 25	X X X X X X X X X X X X X X X X X X X			100 8	R1		RUN 16		SILTSTONE, dark gray, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as joints at 70 to 90 degrees to horizontal and in fair condition. Laminated with partings along bedding at 0 to 3 degrees to horizontal. (Mc)		
85		X X X X X X X X X X X X X X X X X X X			100	R1		RUN 17		SILTSTONE, dark gray, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as joints at 70 to 90 degrees to horizontal and in fair condition. Laminated with partings along bedding at 0 to 3 degrees to		

Washington State
Department of Transportation

HOLE No. P

PH3-8A-00

PROJECT SR395 North Spokane Corridor Project

Sheet <u>5</u> of <u>8</u>
Job No. <u>XL0715</u>

Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6"/SPT (N)	Description of Material	Groundwater	Instrument
	-27	X X X X X X X X X X X X X X X X X X X		6 100 9	Rí		RUN 18		horizontal. (Mc) (RQD=0) SILTSTONE, dark gray, fine grained, fresh, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees and in good condition. Laminated with clay. (Mc) SILTSTONE, dark gray, fine grained, fresh, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees and in good condition. Laminated with clay. (Mc)	-	
90	28	X X X X X X X X X X X X X X X X X X X		100 16	R1		RUN 19		Note: At 91ft, slickensided fractures at 60 degrees to horizontal. CLAYSTONE, gray, fine grained, fresh, very weak rock (R1). Discontinuities are closely spaced as		
95	29	(<u>100</u> 18	R1		RUN 20		partings along bedding at 0 to 3 degrees to horizontal and in fair condition, polished. Laminated with siltstone. (Mc)		20000000
100-	30	X X X X X X X X X X X X X X X X X X X							CLAYSTONE, gray, fine grained, fresh, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal and in fair condition, polished. Laminated with siltstone. (Mc)		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
105	31	X X X X X X X X X X X X X X X X X X X		100	R1		RUN 21		Note: At 103.6 ft, slickensided fracture at 60 degrees to horizontal. CLAYSTONE, dark brown, fine grained rock, fresh, very weak rock (R1). Discontinuities are closely spaced and in poor condition. (Mc)	-	
j	-33	**************************************		100 6	R1		RUN 22	AL (NP)	spaced and in poor condition. (Mc) Note: At 104.2 ft, slickensided clay gouge. Note: At 105.5 to 112.5, slide plane. Note: At 107.6 ft, fracture is rotated 40 degrees to horizontal.		
110		× × × × × × × × × ×						GS W = 21 W = 39	SILTSTONE, yellow and dark yellowish orange, slightly weathered, very weak rock (R1).		

HOLE No. PH3-8A-00

Washington State
Department of Transportation

Sheet 6 of 8 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

PRO	DJECT	303	95 North S	рокапе	Corrido	Projec	CL				Job No. XL0715		
Depth (ft)	Meters (m)	Profile	1	ock Quality esignation (%)	80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
	34	X X X X X X X X X X X X X X X X X X X				100	R1		RUN 23	AL	Discontinuities are closely spaced and in very poor condition, slickensided with clay gouge at 50 degrees to horizontal. (Mc) Note: At 109.3 ft, very weak zone at 0 degrees to horizontal. Note: At 111.6 ft, very soft zone at 60 degrees to horizontal.		
115—	—35 -	X X X X X X X X X X X X X X X X X X X									SILTSTONE, dark gray, fine grained, fresh, very weak rock, (R1). Discontinuities are widely spaced as parting along bedding at 0 to 3 degrees to horizontal and in good condition. (Mc)		
120 —	-36	X X X X X X X X X X X X X X X X X X X				100	R1		RUN 24	62	SILTSTONE, dark gray, fine grained, fresh, very weak rock, (R1). Discontinuities are widely spaced as parting along bedding at 0 to 3 degrees to		
-	-37	X X X X X X X X X X X X X X X X X X X				100	R1		RUN 25	1 	horizontal and in good condition. (Mc)	-	
125	- 38	X X X X X X X X X X X X X X X X X X X				100	R1		RUN 26		SILTSTONE, dark gray, fine grained, fresh, very weak rock, (R1). Discontinuities are widely spaced as parting along bedding at 0 to 3 degrees to horizontal and in good condition. (Mc)	- - -	
125	-39	x x x x x x x x x x x x x x x x x x x			——————————————————————————————————————	100	R1		RUN 27		SILTSTONE, dark gray, fine grained, fresh, very weak rock, (R1). Discontinuities are widely spaced as parting along bedding at 0 to 3 degrees to horizontal and in good condition. (Mc)	- - -	
130	-40	**************************************			: - - -	100	R1		RUN 28		SILTSTONE, dark gray, fine grained, fresh, very weak rock, (R1). Discontinuities are widely spaced as parting along bedding at 0 to 3 degrees to horizontal and in good condition. (Mc)	-	
135	-41	x x x x x x x x x x x x x x x x x x x				7					SILTSTONE, dark gray, fresh, very weak rock, (R1). Discontinuities are widely spaced as parting along		

PH3-8A-00

HOLE No.

ROCKN I:PROJECT244(006)WSDOTPH3.GPJ WSDOT.GDT 5/23/01+11:11:37 A5

Washington State
Department of Transportation

Sheet 7 of 8 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Test Data & Blows/6*/SPT (N) **Rock Quality** Meters (m) Sample No € Designation Rec. Description of Material (%) FPF 60 bedding at 0 to 3 degrees to horizontal and in good condition. (Mc) R1 **RUN 29** 100 10 CLAYSTONE, light gray, fine grained, fresh, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to 140 horizontal and in good condition. (Mc) R1 **RUN 30** 100 CLAYSTONE, light gray, fine grained, fresh, very weak rock (R1). Discontinuities are closely spaced as fractures at 70 to 90 degrees to horizontal and as partings along bedding at 0 to 3 degrees to horizontal 145 and in good condition. (Mc) 100 R1 **RUN 31** CLAYSTONE, light gray, fine grained, fresh, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal and in good condition. (Mc) 150 CLAYSTONE, yellow, fine grained, fresh, highly weathered, very weak rock (R1). Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal. (Mc) 100 **RUN 32** 10 BASALT, yellow, fine grained, highly weathered, very weak rock (R1). Discontinuities are very closely 100 R1 **RUN 33** spaced at 60 to 80 degrees to horizontal and in very poor condition. (Mv) (RQD=0) BASALT, yellow, fine grained, highly weathered, very weak rock (R1). Discontinuities are very closely spaced at 60 to 80 degrees to horizontal and in very 155 poor condition. (Mv) R4 **RUN 34** 100 BASALT, dark gray, fine grained, slightly weathered, strong rock (R4). Discontinuities are closely spaced

Washington State
Department of Transportation

HOLE No. **PH3-8A-00**

PROJECT SR395 North Spokane Corridor Project

Sheet <u>8</u> of <u>8</u>
Job No. **XL0715**

PR	OJECT	Sha	95 North Spol	kane Cornu	or Projec	<u> </u>	_			Job No. XL0715		
Depth (ft)	Meters (m)	Profile	Rock C Design (% 20 40	nation	% Rec. FPF	Rock	Samole Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
	-49				80	R4		RUN 35		at 40 to 60 degrees to horizontal and in fair condition. (Mv)	-	
165-	50 						-			BASALT, dark gray, fine grained, slightly weathered, strong rock (R4). Discontinuities are very closely spaced at 40 to 60 degrees to horizontal and in poor to very poor condition. (Mv)		
	51				80	R4		RUN 36		BASALT, dark gray, fine grained, slightly weathered, strong rock (R4). Discontinuities are very closely spaced at 40 to 60 degrees to horizontal and in poor to very poor condition. (Mv) (RQD=0)		
170	—52 -				74	R4		RUN 37		BASALT, dark gray, fine grained, slightly weathered, strong rock (R4). Discontinuities are very closely spaced at 40 to 60 degrees to horizontal and in poor to very poor condition. (Mv) (RQD=0)		
175	-53											
	−54		 									
180-	-55										- - -	
e-	-56										-	
185 —		i i	1 1		l						- 1	- 1

Washington State
Department of Transportation

НО	LE No.	PH:	3-8B-00					bepartment of Trainsp	ortatio	
PRO	OJECT	SR3	95 North Spokane Co	orridor Projec	t			Job No. XL0715		
		Spok	ane, Washington					S.R. 395		-
Sta	tion _	334	+28.445		C	Offset	148.1	8 C.S		
Equ	ipment	Мо	rooka MST-1100		C	asing		Ground El2271.5 (692.35 m)		_
Met	hod of B	oring	HWT/HQ Casing A	dvance				(<u></u>		
Sta	rt Date	Nov	ember 19, 2000		Com	pletion	Date	November 19, 2000 Sheet 1 of 8		
Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft	SPT Blows/6* (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
10					X	D-1		Sandy SILT with scattered angular gravel, medium dense, yellowish brown, moist. (Qmw) Caranite boulder or cobble		
	6							Poorly graded coarse SAND, rounded, dense, gray, laminated with scattered iron oxide rich zones, no HCL	X	

HOLE No. PH3-8B-00

Washington State
Department of Transportation

Sheet 2 of 8 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Sample Type Standard Sample No. Depth (ft) SPT (Tube No.) Meters (m) Profile Tests Penetration Lab Blows/6* Description of Material Blows/ft (N) 10 20 30 40 reaction, (completely weathered sandstone). (Mc) RUN 2 Poorly graded coarse SAND with trace of clay, rounded, dense, gray, moist, laminated with iron oxide rich zones, 25 no HCL reaction, (completely weathered sandstone). (Mc) RUN 3 Poorly graded coarse SAND with trace of fat clay, rounded, dense, laminated, no HCL reaction, (completely 30 weathered sandstone). (Mc) D-4 14 17 10 20 Poorly graded coarse SAND with trace of fat clay, (37)RUN 4 rounded, dense, laminated with silt, no HCL reaction, (completely weathered sandstone). (Mc) 35 Poorly graded coarse SAND with trace of fat clay, rounded, dense, laminated, no HCL reaction, (completely I:PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01+2:28:10 PS weathered sandstone). (Mc) RUN 5 Poorly graded coarse SAND, rounded, dense, laminated, 12 no HCL reaction, (completely weathered sandstone). (Mc) 40 6 D-5 16 13 24 (40)RUN 6 Poorly graded coarse SAND, rounded, dense, pale yellow and yellow, moist, laminated no HCL reaction,

HOLE No. PH3-8B-00

I:PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:26:11 P5

Washington State
Department of Transportation

Figure A-15 Page (3 of 8)

Sheet 3 of 8 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Sample Type Groundwater Standard Sample No. (Tube No.) Depth (ft) Meters (m) SPT Tests Profile Lab Penetration Blows/6* Description of Material Blows/ft (N) 30 10 20 (completely weathered sandstone). (Mc) 14 RUN 7 Poorly graded coarse SAND, rounded, dense, light gray, 15 moist, laminated with bedding at 0 to 3 degrees to horizontal, no HCL reaction, (completely weathered 50 sandstone). (Mc) D-6 12 Poorly graded coarse SAND, rounded, dense, reddish 24 yellow, wet, laminated, (completely weathered (40)sandstone). (Mc) RUN 8 55 Fat CLAY, hard, light gray, wet, laminated, no HCL reaction. (Mc) RUN 9 18 Fat CLAY, hard, light gray, wet, laminated, no HCL reaction. (Mc) **RUN 10** 19 Elastic SILT, hard, light gray, laminated, no HCL reaction. 65 20 Soil drilling halted due to rock. Log continues on following page. 21

Washington State
Department of Transportation

HOLE No.	PH3-8B-00							
PROJECT	SR395 North Spokane Corridor	r Proje	ct	***********		Job No. XL0715		
Station	Spokane, Washington 334+28.445			ffset		S.R. <u>395</u>		
Equipment	334+28.445 Morooka MST-1100			asing		C.S		
Method of B				asing		Ground El 2271.5 (692.35 m)		
Start Date	November 19, 2000		C	alatian I	Data Na	washer to coop Shoot A of B		
I		_	П	pletion I		vember 19, 2000 Sheet 4 of 8	T	Т
Depth (ft) Meters (m)	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock Strength	Sample Type	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	
-	* * * * * * * * * * *	100	R1	RUN			-	X
70-	X					SILTSTONE, light gray, fine grained, moderately weathered, very weak rock (R1), potential for slaking. Discontinuities are widely spaced and in poor condition with oxidized zones along bedding. (Mc)	-	
7523	X X X X X X X X X X X X X X X X X X X	100	R1	RUN	12	SILTSTONE, light gray, fine grained, moderately weathered, very weak rock (R1). Discontinuities are widely spaced and in poor condition with oxidized zones along bedding. (Mc)	-	A A A A A A A A A A A A A A A A A A A
	× × × × × × × × × × × × × × × × × × ×	100	R1	RUN	13	SILTSTONE, yellow, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately		
25	× × × × × × × × × × × × × × × × × × ×	73	R1	RUN	4	spaced as fractures at 30 to 80 degrees to horizontal and in good condition. (Mc)		
85—						SILTSTONE, yellow, fine grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced as fractures at 30 to 80 degrees to horizontal and in good condition. (Mc)	-	XXXX

PH3-8B-00

Washington State
Department of Transportation

Sheet 5 of 8 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

HOLE No.

Depth (ft) Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
90 28	X X X X X X X X X X X X X X X X X X X		100	RI		RUN 15		CLAYSTONE, dark brown, fine grained, fresh, very weak rock (R1), low to moderate potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal and in good condition. (Mc)		
95 ——29	**************************************		92 20	R1		RUN 16		CLAYSTONE, dark brown, fine grained, fresh, very weak rock (R1), low to moderate potential for slaking. Discontinuities are very closely spaced as fractures at 80 degrees to horizontal and in good condition. (Mc)	-	
-30	**************************************		96	R1		RUN 17		CLAYSTONE, dark brown, fine grained, fresh, very weak rock (R1), low to moderate potential for slaking. Discontinuities are closely spaced and in good condition. (Mc)	- 	
_31	x x x x x x x x x x x x x x x x x x x		100 10	R1		RUN 18		æ	-	
105 — 32	x x x x x x x x x x x x x x x x x x x						34	CLAYSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to3 degrees to horizontal and fractures at 80 degrees to horizontal and in good condition. (Mc)	- 	
-33	x x x x x x x x x x x x x x x x x x x		100 7	R1		RUN 19		CLAYSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as fractures at 80 degrees to horizontal and in good condition. (Mc)		

HOLE No. **PH3-8B-00**

Washington State
Department of Transportation

Sheet <u>6</u> of <u>8</u>
Job No. <u>XL0715</u>

PROJECT SR395 North Spokane Corridor Project

Depth (ft)	Meters (m)	Profile	20	Rock C Design (%	nation	80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	
115-	- 35	* * * * * * * * * * * * * * * * * * *					96	R1		RUN 2		CLAYSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced and in good condition. (Mc)		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
	_	* * * * * * * * * * * * * * * * * * *					100 100 8	R1		RUN 2		SILTSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to3 degrees to horizontal. (Mc)		
120	-36	X X X X X X X X X X X X X X X X X X X										SILTSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced and in good condition. (Mc)		THE SERVICES
	-37	X X X X X X X X X X X X X X X X X X X					90 6	R1		RUN 2:		SILTSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced and in good condition. (Mc)	-	
125—	38 	X X X X X X X X X X X X X X X X X X X					6					SILTSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal and in good condition. (Mc)	-	XXXXX
	-39	X X X X X X X X X X X X X X X X X X X					100	R1		RUN 25		03/15/2001	- Ţ	7777
130	-40	××××××××××××××××××××××××××××××××××××××					100 8	R1		RUN 26		SILTSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced and in good condition. (Mc)		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
135-	-41											SILTSTONE, grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced at 0 to 3 degrees along bedding and in good condition. (Mc)		NO CONTRACTOR NO.

Washington State
Department of Transportation

HOLE No. PH3-8B-00

PROJECT SR395 North Spokane Corridor Project

Sheet 7 of 8 Job No. XL0715

	DJECT		93 North Spokane Corndor		_	=	,		Job NoXLU/15	77.5	
Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock Strength	Sample Type	Sample No.	Test Data & Blows/6"/SPT (N)	Description of Material	Groundwater	Instrument
140-	42 43	* * * * * * * * * * * * * * * * * * *		100	R1		RUN 27		SILTSTONE/SANDSTONE, gray, fine grained, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal and in good condition. (Mc)		KKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKK
145	-44	X X X X X X X X X X X X X X X X X X X		100 4	R1		RUN 28		SILTSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced and in good condition. (Mc) Note: Scattered basalt fragments. SILTSTONE, dark brown, fine grained, fresh, very		***************************************
	- 45	x x x x x x x x x x x x x x x x x x x		100 5	R1		RUN 30		weak rock (R1), potential for slaking. Discontinuities are closely spaced and in good condition. (Mc)	_	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
150 —	-46	X		100 20	R1		RUN 31		CLAYSTONE, gray, fine grained, fresh, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and widely spaced as fractures at 70 degrees to horizontal and in good condition. (Mc)	- - -	
155—	-47	× × × × × × × × × × × × × × × × × × ×		20					CLAYSTONE, gray, fine grained, fresh, very weak rock (R1). Discontinuities are moderately spaced as fractures at 70 degrees to horizontal and in good condition. (Mc)		
-	-48	x x x x x x x x x x x x x x x x x x x		100 8	R1		RUN 32		CLAYSTONE, gray, fine grained, fresh, very weak rock (R1). Discontinuities are widely spaced as fractures at 70 degrees to horizontal and in good condition. (Mc)	_	
160	- 1	x x x x x x x x x x x x x x x x x x x							SILTSTONE, dark brown, fine grained, fresh, very weak rock (R1). Discontinuities are closely spaced as fractures along partings along bedding and in good condition. (Mc)		

Washington State Department of Transportation

PH3-8B-00 HOLE No.

8 Sheet of XL0715 Job No.

Depth (ft)	Meters (m)	Profile		k Quality signation (%)		% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	1
165	50	**************************************			 	34 3	R1		RUN 33	W = 28 AL	CLAYSTONE, light gray, fresh, very weak rock (R1). Scattered basalt fragments with disturbed bedding. (Mc)	-	
170-	51	x x x x x x x x x x x x x x x x x x x				100 3	R1		RUN 34		CLAYSTONE, yellowish red, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced and in good condition. (Mc) SILTSTONE, gray, fine grained, slightly weathered,	-	***
	52 53	x x x x x x x x x x x x x x x x x x x				100	R1		RUN 36		very weak rock (R1). Discontinuities are closely spaced and in poor to good condition. (Mc) SILTSTONE, gray, fine grained, slightly weathered,		
175	54	x x x x x x x x x x x x x x x x x x x		 				U			very weak rock (R1). Discontinuities are closely spaced and in poor to good condition. (Mc)		
180 —	55			 									
	-56		 	 	1								

Washington State
Department of Transportation

Figure A-16 Page (1 of 13)

HOLE No.		dor Project	Job NoXL0715
Station	Spokane, Washington 334+51.132	Offset 424.48	S.R. <u>395</u> C.S.
Equipmen	Morooka MST-1100	Casing	Ground El 2348.1 (715.70 m)
Method of			
Depth (ft) Meters (m)	Rock Quality Designation (%)	Sample No. Sample Type Sample No. Standary 11, 2001	Sheet 1 of 13 Description of Material
	20 40 60 80	SILT with suba loose, very dark grass roots	ngular basalt gravel and cobbles, k grayish brown, moist, homogeneous,
-1		moderately wea	ly vesicular, dark gray, fine grained, athered, moderately strong rock (R3). are very closely spaced, and in poor (RQD=0)
5—		10 moderately wea	ly vesicular, dark gray, fine grained, athered, moderately strong rock (R3). are very closely spaced, and in poor (RQD=0)
10-3			gray streaked brown, fine grained, ately weathered, moderately strong
-4			ontinuities are closely spaced, and in
15-		slight to modera	gray streaked brown, fine grained, tely weathered, moderately strong ontinuities are closely spaced, and in (Mv) (RQD=0)
-6		100 8 R3 Run 5	-

HOLE No. PH3-8C-01

5/22/01•2:40:40 P5

ROCK I:\PROJECT\244\006\WSDOTPH3.GPJ WSDOT.GDT

Washington State
Department of Transportation

Sheet 2 of 13 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Rock Quality Sample Type Sample No. Meters (m) € Instrument Lab Designation Depth Rec. Description of Material (%) FPF 20 40 60 80 BASALT, dark gray streaked brown, fine grained, slight to moderately weathered, moderately strong rock (R3). Discontinuities are closely spaced, and in poor condition. (Mv) 100 R3 RUN 6 25 BASALT, dark gray streaked brown, fine grained, slight to moderately weathered, moderately strong rock (R3). Discontinuities are closely spaced, and in poor condition. (Mv) RUN 7 100 R3 30 BASALT, dark greenish gray, fine grained, slightly weathered, moderately strong rock (R3). Discontinuities are closely spaced, and in poor condition. (Mv) RUN 8 34/R1 100 35 SILTSTONE, dark brown, fine grained, bedded with sandstone, old soil horizon. (Mc) R1 RUN 9 100 12 40 CLAYSTONE, white, fine grained, slightly weathered, weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) 100 R1 **RUN 10** 0

Washington State Department of Transportation

Figure A-16 Page (3 of 13)

HOLE No. PH3-8C-01

PROJECT _SR395 North Spokane Corridor Project

Sheet 3 of 13 Job No. XL0715

Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Lab Tests	Description of Material	Groundwater	Instrument
	14	× × × × × × × × × × × × × × × × × × ×		100	Rí		RUN 11		CLAYSTONE, white streaked moderate yellowish brown and moderate reddish brown, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are widely spaced, and in poor condition. (Mc)	-	KKKKKKKKK
50 —	—15 -			0					SANDSTONE, pale yellow, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees, and in poor condition. (Mc)		<u>EKKEKKEKKEKEKEKEKEKEKEKEKEKEKEKEKEKEKE</u>
55—	-16 -			100	R1		RUN 12				
-	— 17 — 18			100 0	R1		RUN 13		SANDSTONE, pale yellow, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees, and in poor condition. (Mc)		
60	- 19								SANDSTONE, light gray to pale yellow, medium grained, slightly weathered,very weak rock (R1). Discontinuities are widely spaced as fractures at 0 to 30 degrees to horizontal, and in good condition. (Mc)	-	\sim
65 —	-20			100	R1		RUN 14		Zone cemented with iron oxide at 63.0 ft, reddish brown	-	
-	-21			100 0	R1		RUN 15		SANDSTONE, light gray to pale yellow, medium grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced, and in good condition. (Mc)		

Washington State
Department of Transportation

HOLE No. PH3-8C-01

PROJECT SR395 North Spokane Corridor Project

Sheet 4 of 13 Job No. XL0715

SANDSTONE, light gray to pale yellow, medium grained, slightly weathered very weak rock (R1). Discontinuities are widely spaced, and in good condition. (Mc) SANDSTONE, light gray to pale yellow, medium grained, slightly weathered very weak rock (R1). Discontinuities are widely spaced, and in good condition. (Mc) SANDSTONE, reddish brown, medium grained, slightly weathered very weak rock (R1). Discontinuities are widely spaced, and in good condition. (Mc) SANDSTONE, reddish brown, medium grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced, and in good condition. (Mc) SANDSTONE, white, medium grained, fresh, very weak rock (R1). Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in good condition. (Mc) SANDSTONE, reddish brown, medium grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in good condition. (Mc) SANDSTONE, reddish brown, medium grained, slightly weathered, very weak rock (R1), potential for slightly paced as partings along bedding at 0 to 3 degrees to horizontal. (Mc)	Depth (ft)	Meters (m)	Profile	ck Quality signation (%)	80	% Rec. FPF	Rock Strength	Sample Type	Sample No.	Lab Tests	Description of Material	Groundwater	Instrument
SANDSTONE, white, medium grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in good condition. (Mc)	-	22				100	R1		RUN 16		grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced, and in good		XXXXXXXXXX
SANDSTONE, white, medium grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in good condition. (Mc)	75 —	-23									grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced, and in good		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
SANDSTONE, white, medium grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in good condition. (Mc)	80-					100 0	R1		RUN 17		slightly weathered, very weak rock (R1). Discontinuities are widely spaced, and in good		ACCEPTATION
	85-	-26									weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3		Ž
	90-					100 0	R1		RUN 18		slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as	[P	R

Washington State Department of Transportation

Figure A-16 Page (5 of 13)

PH3-8C-01 HOLE No.

Sheet __ 5 of 13 XL0715 Job No.

PROJECT	SR3	95 North Spokane Corridor	Projec	et	_			Job No. XL0715	_	
Depth (ft) Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock Strength	Sample Type	Sample No.	Lab Tests	Description of Material	Groundwater	Instrument
-29 -30 -31			99 0	R1		AUN 19		SANDSTONE, very light gray to white, medium grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in good condition. (Mc)		
105 32			100 0	R1		RUN 20		SANDSTONE, yellowish brown, medium grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced, and in poor condition. (Mc)		
110 110								SANDSTONE, yellowish brown, medium grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced, and in poor condition. (Mc)	-	
36 - 36 - 36 - 36 - 36 - 36 - 36 - 36 -			92 0	Rí		RUN 21		SANDSTONE, yellowish brown, medium grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced, and in poor condition. (Mc)	- - -	

HOLE No. PH3-8C-01

Washington State
Department of Transportation

Sheet 6 of 13 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Depth (ft)	Meters (m)	Profile	20	Desig	Quality mation %) 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Lab Tests	Description of Material	Groundwater	
	-37										SANDSTONE, yellowish brown, medium grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced, and in poor condition. (Mc)	-	
125—	38	X X X X X X X X X X X X X X X X X X X									SILTSTONE, brownish yellow, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are closely spaced along bedding at 0 to 3 degrees to horizontal, and in very poor condition. (Mc)		
130	— 39 -	x x x x x x x x x x x x x x x x x x x				<u>100</u> 0	R1	ı	RUN 22			- 	
130-7	 40	X X X X X X X X X X X X X X X X X X X									CLAYSTONE, light gray to white, fresh, very weak rock (R1), potential for slaking, discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition, slickensided. (Mc)		Ŷ
135-	-41	x x x x x x x x x x x x x x x x x x x				100	R1	F	RUN 23		CLAYSTONE, light gray to white, fresh, very weak rock (R1), potential for slaking, discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition,	- - -	
	- 42	x x x x x x x x x x x x x x x x x x x				100 0	R1	R	UN 24		slickensided. (Mc)		
140	-43	x x x x x x x x x x x x x x x x x x x									SILTSTONE, light gray to white, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc)		なななななな
-	- 44	× × × × × × × × × × × × × × × × × × ×											

Washington State
Department of Transportation

HOLE No. PH3-8C-01

I:\PROJECT\244\006\WSDOTPH3.GPJ WSDOT.GDT 5/22/01*2:40:46

Sheet 7 of 13 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Rock Quality Ê E Designation Lab Tests Meters (**Description of Material** Rec. (%) FPF 60 Zone cemented with iron oxide at 147.0 ft R1 **RUN 25** 100 150 SILTSTONE, light gray to white, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) 80 R1 **RUN 26** 155 SILTSTONE, light gray to white, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) R1 RUN 27 100 160 -SILTSTONE, light gray, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition, slickensided. (Mc) - 50 165 SILTSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) Organic layer at 167.5 ft 100 R1 **RUN 28**

Washington State
Department of Transportation

HOLE No. PH3-8C-01

ROCK INPROJECT/244/006/WSDOTPH3.GPJ WSDOT,GDT 5/22/01*2:40:47 PS

Sheet 8 of 13 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Rock Quality Depth (ft) Meters (m) Sample No. Designation Lab Rec. **Description of Material** (%) FPF -52 SILTSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities 53 are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition, slickensided. (Mc) 175 100 R1 **RUN 29** Ash layer with very closely spaced fractures at 179.0 to 179.8 ft 180 -SILTSTONE, dark brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities 56 are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition, slickensided. (Mc) 185 R1 **RUN 30** 190 58 SILTSTONE, grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc)

Washington State Department of Transportation

HOLE No. PH3-8C-01

SR395 North Spokane Corridor Project

9 of 13 XL0715 Sheet __

PRO	JECT	SR3	95 Norti	h Spokane	e Corrido	or Proje	ct	_			Job No. XL0715	_	
Depth (ft)	Meters (m)	Profile	20	Rock Qualit Designation (%)		% Rec. FPF	Rock	Sample Type	Sample No.	Lab Tests	Description of Material	Groundwater	
	-60	* * * * * * * * * * * * * * * * * * *				100 2	R1		RUN 31		SILTSTONE, grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) Fractures are widely spaced from 194.0 to 197.0 ft	-	XXXXXXXXXX
200 -	-61	X X X X X X X X X X X X X X X X X X X									Fractures are closely spaced from 199.0 to 202.0 ft		
205 —	-62	X X X X X X X X X X X X X X X X X X X									SILTSTONE, grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc)	-	
	- 63	x x x x x x x x x x x x x x x x x x x				100	R1		RUN 32			-	
210	-64	X X X X X X X X X X X X X X X X X X X									-		
215-	-66	X X X X X X X X X X X X X X X X X X X									SILTSTONE, grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc)	- - - -	
220	67	× × × × × × × × × × × × × × ×				100 2	R1		RUN 33		MUDSTONE, grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc)		******

HOLE No. PH3-8C-01

ROCK INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:40:50 P5

Washington State
Department of Transportation

Sheet 10 of 13 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Rock Quality £ Meters (m) Sample No. Designation Lab Tests Depth Rec. Description of Material (%) **FPF** MUDSTONE, grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) CLAYSTONE, grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 225 3 degrees to horizontal, vertical, and in very poor condition, slickensided. (Mc) 69 **RUN 34** 89 R1 230 -CLAYSTONE, grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, vertical, and in very poor condition, slickensided. (Mc) Dark organic layer at 233.5 to 233.6 ft 235 100 R1 **RUN 35** SILTSTONE, white to light gray, fine grained, fresh, 240very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal. (Mc) 32 R1 **RUN 36**

HOLE No. PH3-8C-01

ROCK INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01+2:40:51 P5

Washington State
Department of Transportation

Sheet 11 of 13 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Rock Quality Ē Sample No. E Lab Designation Rec. Description of Material (%) FPF 60 SILTSTONE, gray, fine grained, fresh, very weak rock (R1). Discontinuities are very closely spaced as partings along bedding at 0 to 3 degrees to horizontal. (Mc) R1 **RUN 37** 100 250 SILTSTONE, dark grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in fair condition. (Mc) **RUN 38** R1 100 255 SILTSTONE, dark grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in fair condition. (Mc) R1 **RUN 39** 260 SILTSTONE, dark grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in fair condition. (Mc) 265 100 R1 **RUN 40**

HOLE No. PH3-8C-01

ROCK INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:40:52 PS

Washington State
Department of Transportation

Sheet 12 of 13 Job No. XL0715

PROJECT _ SR395 North Spokane Corridor Project

Rock Quality Sample No. Depth (ft) Meters (m) Designation Lab Rec. Description of Material (%) 83 SILTSTONE, dark grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. 275 Discontinuities are widely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in fair condition. (Mc) RI **RUN 41** 100 85 280 CLAYSTONE, grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition, slickensided. (Mc) 285 100 5 R1 **RUN 42** 290 CLAYSTONE, grayish brown, fine grained, fresh, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition, slickensided. (Mc)

Washington State
Department of Transportation

Figure A-16 Page (13 of 13)

HOLE No. PH3-8C-01

PROJECT SR395 North Spokane Corridor Project

Sheet 13 of 13 Job No. XL0715

Depth (ft)	Meters (m)	Profile	Desig	Quality gnation %) 60 80	% Rec. FPF	Rock Strength	Sample Type	Sample No.	Lab Tests	Description of Material	Groundwater	1
	-90	* * * * * * * * * * * * * * * * * * *								CLAYSTONE, dark red, fine grained, slightly weathered, very weak rock (R1). (Mc)	-	*****
-	91				100	R4		RUN 43			_	
300	-92				,					BASALT, dark red to dark gray, fine grained, slightly weathered, strong rock (R4). Discontinuities are very closely spaced at 30 to 40 degrees to horizontal, and in poor condition. (Mv)		*****
	-				100	R4		RUN 44				*****
305	—93 -									BASALT, dark gray, fine grained, slightly weathered, strong rock (R4). Discontinuities are moderately spaced at 30 to 60 degrees to horizontal, and in good condition. (Mv)		******
9	—94			 			U				-	***
310	- 95									*		
315	-96										-	
:-												

Station 337+25.823	PROJECT		5 North Spokane Co ine, Washington					Job No. XL0715 S.R. 395		
Method of Boring HWT/HQ Casing Advance Start Date November 16, 2000 Sheet 1 of 8	Station			-						
Start Date November 16, 2000 Sheet 1 of 8	Equipment	More	ooka MST-1100		C	asing				
Strong S	Method of B	oring	HWT/HQ Casing A	dvance						
10 20 30 40 Silty SAND, dark brown, medium dense, moist, roots. (Qes) Silty SAND, dark brown, medium dense, moist, roots. (Qes) Silty SAND, dark brown, medium dense, moist, roots. (Qes) Poorty graded SAND with gravel, rounded to angular, dense, grayish brown, moist, homogeneous, no HCL reaction. (Qmw) Poorty graded SAND with gravel, rounded to subangular, dense, grayish brown, moist, homogeneous. (Qmw) Poorty graded SAND with gravel, rounded to subangular, dense, grayish brown, moist, homogeneous. (Qmw)	Start Date	Nover	mber 16, 2000		Corr	pletion	Date	November 16, 2000 Sheet 1 of 8		
Silty SAND, dark brown, medium dense, moist, roots. Silty SAND, dark brown, medium dense, moist, roots. (Ces) Poorty graded SAND with gravel, rounded to angular, dense, grayish brown, moist, homogeneous, no HCL reaction. (Cmw) Poorty graded SAND with gravel, rounded to subangular, dense, grayish brown, moist, homogeneous. (Cmw) Poorty graded SAND with gravel, rounded to subangular, dense, grayish brown, moist, homogeneous. (Cmw) Poorty graded SAND with gravel, rounded to subangular, dense, grayish brown, moist, homogeneous. (Cmw)	Depth (ft) Meters (m)	Profile	Penetration Blows/ft	Blows/6 (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	toomination
Poorly graded SAND with gravel, rounded to subangular, dense, grayish brown, moist, homogeneous. (Qmw) 15— 15— 15— 16— 17 24 (41) Poorly graded SAND with cobbles and boulders,	-1	8 44 8 44 78 47 78 47				D-1				SSSSS
Poorly graded SAND with gravel, rounded to subangular, dense, grayish brown, moist, homogeneous. (Qmw) 15 Poorly graded SAND with cobbles and boulders,	-	315 314 1, 335		6 (19) 15 15 30	X	D-2		dense, grayish brown, moist, homogeneous, no HCL		XXXXXXXXXXXXXXXXXX
Poorly graded SAND with cobbles and boulders,	10-			17 24	X	D-3				KKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKK
Sandy SILT, medium dense, yellow, moist, laminated, no				>>◆ 50/1•	Ť	D-4 RUN 1		subangular, very dense, grayish brown, moist. (Qmw)	-	REPRESENTATION

Washington State
Department of Transportation

Figure A-17 Page (2 of 8)

HOLE No. PH3-9-00

Sheet 2 of 8

Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Secondary Seco	PH	_	T			-1		_			300 NoXE0713	_	
Fat CLAY, stiff, white, wet, laminated, no HCL reaction. (Mc) Fat CLAY, stiff, white, wet, laminated, no HCL reaction. (Mc) Fat CLAY, stiff, white, wet, laminated, no HCL reaction. (Mc) Soil drilling halted due to rock. Log continues on following page.	Depth (ft)	Meters (m)	Profile	10	Penetration Blows/ft	n	Blows/6*	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	35						4 (6) 5 7 7 (14)		D-5 RUN 3 D-6 RUN 4		Fat CLAY, stiff, white, wet, laminated, no HCL reaction. (Mc) Fat CLAY, stiff, white, wet, laminated. (Mc) Fat CLAY, stiff, white, wet, laminated, no HCL reaction. (Mc) Fat CLAY, stiff, white, wet, laminated, no HCL reaction. (Mc) Soil drilling halted due to rock. Log continues on	-	

		Spok	ane, Washington						S.R. <u>395</u>		
Stati	ion	337	+26.823		, (Offs	et	0.44	C.S		
Equi	ipment	Mor	ooka MST-1100			asi	ng		Ground El		
Meth	nod of E	Boring	HWT/HQ Casing Adv	/ance							
Start	t Date	Nove	ember 16, 2000		Con	nple	tion Da		vember 16, 2000 Sheet 3 of 8		
Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	
	-13	X X X X X X X X X X X X X X X X X X X		94 8	R1	ľ	RUN 5		CLAYSTONE, white, streaked yellow, fine grained, moderately weathered, very weak rock (R1). Discontinuities are closely spaced and in very poor condition. (Mc)		KKKKKK
45-	-14	X X X X X X X X X X X X X X X X X X X		97	R1		RUN 6			-	**************************************
50 -	-15	(8					SILTSTONE, dark grayish brown, fine grained, slight	 - - -	KARARARARA
-		x x x x x x x x x x x x x x x x x x x			R1	U	D-9	4	to moderately weathered, very weak rock (R1). Discontinuities are closely spaced and in poor condition. (Mc)		XXXXX
-	-16	x x x x x x x x x x x x	iiii	12		X		5 7 (12)	,	-	
55 —		x x x x x x x x x x x x x x x x x x x		100 17	R1		RUN 7	835b	SILTSTONE, dark grayish brown, fine grained, slight to moderately weathered, very weak rock (R1), Discontinuities are closely spaced as partings along	=	KKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKK
-		x x x x x x x x x x x x x x x x x x x		100	R1		RUN 8		bedding at 0 to 3 degrees from horizontal and in very poor condition, slickensided. (Mc)		SKKKKKK K
50-	- 1	x x x x x x x x x x x x x x x x x x x							SILTSTONE, dark grayish brown, fine grained, slight to moderately weathered, very weak rock (R1). Discontinuities are closely spaced and in poor to very poor condition, slickensided. (Mc)	-	XXXXX

Washington State
Department of Transportation

HOLE No. PH3-9-00

5/23/01+11:21:13 A5

ROCKN I:PROJECT244/006/WSDOTPH3.GPJ WSDOT.GDT

Sheet 4 of 8 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Test Data & Blows/6*/SPT (N) **Rock Quality** Sample Type Groundwater Sample No. E £ Strength Rock Designation Meters (Depth Description of Material Rec. (%) FPF 20 40 60 RI RUN 9 100 19 SILTSTONE, dark grayish brown, fine grained, slight to moderately weathered, very weak rock (R1). Discontinuities are closely spaced and in poor condition. (Mc) 65 20 D-10 5 6 R1 **RUN 10** 100 -21 70 SILTSTONE, dark brown, fine grained, slightly weathered very weak rock (R1), potential for slaking. Discontinuities are close to very closely spaced as parting along bedding at 0 to 3 degrees to horizontal and in very poor condition, slickensided. (Mc) **RUN 11** 100 R1 SILTSTONE, dark brown, fine grained slightly weathered, very weak rock (R1). Discontinuities are close to very closely spaced as partings along bedding at 0 to 3 degrees to horizontal and in very poor condition, slickensided. (Mc) 75 23 R1 **RUN 12** 100 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are 24 close to very closely spaced and in poor condition, open fractures at 79.5 ft are 60 degrees to horizontal and slickensided. 80 (Mc) 100 R1 **RUN 13** 14 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are close to very closely spaced as 85 26 parting along bedding and in very poor condition, slickensided. (Mc)

HOLE No. PH3-9-00

5/23/01+11:21:15 AS

ROCKN I:PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT

Washington State
Department of Transportation

Sheet 5 of 8 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Test Data & Blows/6*/SPT (N) **Rock Quality** Sample Type Ê Sample No. £ Strenath Rock Designation Meters Depth Rec. Description of Material (%) FPF 40 60 80 100 R1 **RUN 14** CLAYSTONE, dark greenish gray, fine grained, slightly weathered, very weak rock (R1), potential for 90 slaking. Discontinuities are very closely spaced and in very poor condition. (Mc) 28 **RUN 15** 100 RI 70 CLAYSTONE, dark greenish gray, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are very closely spaced and in very poor condition. (Mc) 95 -29 Note: 96.8 to 98.0 ft, tipped bedding at 15 degrees to 80 R1 **RUN 16** horizontal Note: 98.2 to 98.7 ft, discolored zones with free water (slide zones) SILTSTONE, light gray to white, fine grained, slightly weathered, very weak rock (R1), clay gouge and soft 100 zones at 0 to 5 degrees to horizontal, potential for slaking. Discontinuities are closely spaced and in very poor condition. (Mc) R1 **RUN 17** 100 03/15/2001 GS W = 30AL 105 -32 SILTSTONE, light gray to white, fine grained, moderately weathered, very weak rock (R1), potential for slaking. Discontinuities are closely spaced at 7 R1 **RUN 18** 70 degrees to horizontal and in very poor condition. (Mc) 33 W = 33SILTSTONE, light yellow, fine grained, slightly AL, weathered, very weak rock (R1), potential for slaking. 110 Discontinuities are closely spaced and in very poor condition. (Mc)

Washington State
Department of Transportation

HOLE No. PH3-9-00

PROJECT SR395 North Spokane Corridor Project

Sheet 6 of 8 Job No. XL0715

Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
		× × × × × × × × × × × × × × × × × × ×		100 12	R1		RUN 19			-	
115-	-35	× × × × × × × × × × × × × × × × × × ×							CLAYSTONE, light yellow, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are very closely spaced and in poor condition, slickensided. (Mc) SILTSTONE, light gray, fine grained, slightly	- -	
		X X X X X X X X X X X X X X X X X X X		100 25	R1		RUN 20		weathered, very weak rock (R1), potential for slaking. Discontinuities are very closely spaced and in poor condition, slickensided. (Mc) CLAYSTONE, gray, fine grained slightly weathered very weak rock (R1). Discontinuities are very closely spaced and in poor condition. (Mc)		
120-		x x x x x x x x x x x x x x x x x x x							SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are very closely spaced as partings along bedding at 3 degrees to horizontal, and in very poor condition, slickensided. (Mc)	-	
-	-37	* * * * * * * * * * * * * * * * * * *		100 10	R1		RUN 21			-	
125	-38	x x x x x x x x x x x x x x x x x x x							SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are very closely spaced as partings along bedding at 3 degrees to horizontal, and in very poor condition, slickensided. (Mc)	- - -	
5	—39	* * * * * * * * * * * * * * * * * * *		100	R1		RUN 22				
130 —	- 40	× × × × × × × × × × × × × × × × × × ×							SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, slickensided. (Mc)	_	
		× × × × × × × × × × × × × × × × × × ×		100 22	R1	-	RUN 23				
135-	—41 -	× × × × × × × × × × × × × × × × × × ×							SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 5 degrees to horizontal. (Mc)	- - -	***

Washington State
Department of Transportation

HOLE No. PH3-9-00

Sheet 7 of 8

SR395 North Spokane Corridor Project XL0715 PROJECT Job No. Test Data & Blows/6*/SPT (N) **Rock Quality** Sample No. Meters (m) £ Designation Depth Rec. Description of Material (%) FPF 60 100 R1 **RUN 24** 15 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced at 0 to 5 degrees to horizontal. (Mc) 140-100 R1 **RUN 25** CLAYSTONE, light brownish gray, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 5 degrees to horizontal and in very poor condition, slickensided. (Mc) 145 R1 100 **RUN 26**

R1

100

100

R1

RUN 27

RUN 28

CLAYSTONE, light brownish gray, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as parting along bedding at 0 to 5 degrees to horizontal and in very poor condition, slickensided. (Mc)

CLAYSTONE, light brownish gray, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are closely spaced and in very poor condition. (Mc)

CLAYSTONE, light brownish gray, slightly weathered, very weak rock (R1), potential for slaking.
Discontinuities are very closely spaced as partings along bedding at 0 to 7 degrees to horizontal and in very poor condition, slickensided. (Mc)

150

155

160

PH3-9-00

HOLE No.

ROCKN 1:PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/23/01-11:21:18 AS

Washington State
Department of Transportation

Sheet 8 of 8 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

PR	OJECT	SH3	95 North Spokane Corrido	r Projec	ct	_			Job No. XL0715		
Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
165 –	50	* * * * * * * * * * * * * * * * * * *		100 5	R1		RUN 29		CLAYSTONE, micaceous, pale green, fine grained, slightly weathered, very weak rock (R1). Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal and in poor condition, slickensided. (Mc)	-	
	—51			75 2	R3		RUN 31		BASALT, dark bluish gray, fine grained, fresh, moderately strong rock (R3). Discontinuities are closely spaced at 70 degrees to horizontal and in fair condition.(Mv) (RQD=0)	-	
170 -	52			100	R3		RUN 32		BASALT, dark bluish gray, fine grained, fresh, moderately strong rock (R3). Discontinuities are closely spaced at 70 degrees to horizontal and in fair condition.(Mv) (RQD=0)	-	
175—	53			180	R3		RUN 33		BASALT, dark bluish gray, fine grained, fresh, moderately strong rock (R3). Discontinuities are moderately spaced at 60 to 70 degrees to horizontal and in good condition. (Mv) (RQD=0) BASALT, dark bluish gray, fine grained, fresh, moderately strong rock (R3). Discontinuities are moderately spaced at 60 to 70 degrees to horizontal and in good condition. (Mv)		
	—54			100 2	R1		RUN 34		GRANITE, grayish green, medium grained, moderate to highly weathered, very weak rock (R1).		
180-	-55			100	R1		RUN 35		Discontinuities are widely spaced at 60 degrees to horizontal and in very poor condition. (Tkia)	-	
185—	-56	く かく クークークークークーク							GRANITE, grayish green, medium grained, moderate to highly weathered, very weak rock (R1). Discontinuities are widely spaced and in very poor condition. (Tkia)		

Washington State
Department of Transportation

	НО	LE No.	_PH3	-10A-(00							Department of Train	sportation	
	PR	OJECT	SR39	5 North	Spoka	ane Corr	ridor Proje	ct				Job No. XL0715		
			Spoka	ane, Wa	shingt	on						S.R. 395		
	Sta	ition _	339-	+99.581					Offset	-101.	73	C.S		
	Equ	uipment	Mor	ooka M	ST-110	0		C	Casing			Ground El 2158.1 (657.79 m	1)	
	Me	thod of I	Boring	HWT/	HQ Ca	sing Ad	vance							
	Sta	rt Date	Nove	mber 21	, 2000			Con	npletior	n Date	November 27, 2000	Sheet 1 of 4		
	Depth (ft)	Meters (m)	Profile	10	Standa Penetra Blows	tion	SPT Blows/6 (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	į.	Description of Material	Groundwater	
			70 70 7 77 7 77			1 1		Ī			SILT with sand and brown, homogeneou	grass roots, medium dense, dark us		
	5-	-1					16 26 50 (76)	X	D-1		Poorly graded SANE dense, grayish brow reaction. (Qmw)	O with gravel, subrounded, very n, wet, homogeneous, no HCL		
DOT.GDT 5/22/01+6:18:42 PS	10-	-3					3 3 5 (8)	Z X	U-2 D-3		Fat CLAY, stiff, pale reaction. (Mc)	brown, moist, laminated, no HCL		
SOIL I/PROJECT244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01-6:18:42 PS	15-	5					5 5 8 (13)	X	D-5		Fat CLAY, stiff, light reaction. (Mc)	brown, moist, laminated, no HCL		
SOIL IMPRO	-	6			 	 _{>} 	6 14 47	X	D-6		Fat CLAY, hard, brow HCL reaction. (Mc)	vnish yellow, moist, laminated, no		

Soil drilling halted due to rock. Log continues rigure A-18 Page (1 of 4) following page.

Washington State
Department of Transportation

PH3-10A-00 HOLE No. SR395 North Spokane Corridor Project Job No. XL0715 PROJECT __ Spokane, Washington Offset -101.73 339+99.581 C.S. _____ Station Morooka MST-1100 Ground El 2158.1 (657.79 m) Equipment Casing **HWT/HQ Casing Advance** Method of Boring November 21, 2000 Start Date Completion Date November 27, 2000 Test Data & Blows/6"/SPT (N) **Rock Quality** Ξ Sample No. E Meters (Designation Depth Rec. Description of Material (%) FPF 40 60 RUN 1 100 CLAYSTONE, light gray, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor **RUN 2** 100 R1 condition. (Mc) CLAYSTONE, light gray, fine grained, slightly weathered, very weak rock (R1), potential for slaking. 25 Discontinuities are closely spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) R1 RUN 3 60 SANDSTONE, completely weathered, soil-like, very weak rock (R1). Poorly graded, micaceous, rounded, white, moist, bedded, no HCL reaction, (Mc) 30 5/22/01•2:47:15 PS RUN 4 R1 30 10 WSDOT.GDT SANDSTONE, completely weathered, soil-like, very weak rock (R1). Poorly graded, micaceous, rounded, ROCKN I:VPROJECT/244/006/WSDOTPH3.GPJ 35 white, moist, bedded, no HCL reaction, (Mc) -11 D-7 12 SANDSTONE, completely weathered, soil-like, very 18 weak rock (R1). Poorly graded, micaceous, rounded, 22 white, moist, bedded, no HCL reaction, (Mc) (40)R1 **RUN 5** 42 0

HOLE No. PH3-10A-00

Washington State
Department of Transportation

Sheet 3 of 4 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater
	- 13			34 0	R1		RUN 6			
45 —	14								SANDSTONE, completely weathered, soil-like, very weak rock (R1). Poorly graded, micaceous, rounded, white, moist, bedded, no HCL reaction, (Mc)	
	15			100	R1	X	D-8	18 19 26 (45)	SANDSTONE, completely weathered, soil-like, very weak rock (R1). Poorty graded, micaceous, rounded, white, moist, bedded, no HCL reaction, (Mc)	*************
50 —	16			100	R1		RUN 8		SANDSTONE, white, medium grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced, and in very poor condition. (Mc)	855555555555555555555555555555555555555
55-	17			100	R1		RUN 9		SANDSTONE, white, medium grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced, and in very poor condition. (Mc)	
60-	-18			0					SANDSTONE, white, medium grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced, and in very poor condition. (Mc)	
	-19			20 2	Rí	_	RUN 10		·.	***************************************
+			1 1						SANDSTONE, white, medium grained, slightly weathered, very weak rock (R1). Discontinuities are	

Washington State
Department of Transportation

HOLE No. **PH3-10A-00**

PROJECT SR395 North Spokane Corridor Project

Sheet 4 of 4 Job No. XL0715

	DJECT					Cornao	-	_	_			Job No	_	
Depth (ft)	Meters (m)	Profile	20	Desig	Quality gnation %) 60	80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
-	-20			1								moderately spaced as fractures at 60 degrees to horizontal, and in poor condition, slickensided. (Mc) (RQD=0)		
	21			- <u> </u>					X	S-9	22 29 32 (61)	SANDSTONE, white, medium grained, slightly weathered, very weak rock (R1). Discontinuities are moderately spaced, and in poor condition. (Mc)		
70 —	-												-	
-	-22		 		1								-	
75 —	-23													
80-	-24			 	 								-	
	25													
85—	-26		 											
-	<u>.</u>		 			 								
90	-27		 	 	 									

		Spoka	ne, Washington					S.R. <u>395</u>	
Stat	ion _	3394	-87.096		C	Offset	151.2	C.S	
Equ	ipment	More	ooka MST-1100		C	asing		Ground El 2202.2 (671.23 m)	
	hod of E		HWT/HQ Casing Ad		•		5	Name has 67 0000. Sheet 1 of 6	
	t Date	Nove	mber 27, 2000		П	pletion	Date	November 27, 2000 Sheet 1 of 6	Ţ
	Meters (m)	Profile	Standard Penetration Blows/ft	SPT Blows/6* (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater
		8 44 8 44 8 44 8 44 8 44	10 20 30 40					SILT with sand and grass roots, dark brown, medium dense, homogeneous	
	-1			10 7 9 (16)	X	D-1		Fat CLAY, stiff, pale brown, moist, laminated, no HCL reaction. (Mc)	
	-3			3 4		U-2 D-3		Fat CLAY, stiff, pale brown, moist, laminated, no HCL reaction. (Mc)	
-	-4			3 (7)		U-4			-
T. I	-5			3 3 5 (8)	X	D-5		Fat CLAY, stiff, dark brown, moist, no HCL reaction. (Mc)	-
						U-6		Fat CLAY, stiff, dark brown, moist, no HCL reaction. (Mc)	

HOLE No. PH3-10B-00

SOIL INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:22:51 PS

Washington State
Department of Transportation

Sheet 2 of 6 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

PHO	DJECT	Jns:	95 North Spokane Corridor	Project				Job No. XL0715		
Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft 10 20 30 40	SPT Blows/6* (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
	-7	× × × × × × × × × × × × × × × × × × ×		3 5 9 (14)	X	D-7		SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. (Mc) Soil drilling halted due to rock. Log continues on following page.		
25-	-8									
30-	-9								-	
35	-10								-	
	-11			ř						
40-	-13								-	
45										

HOLE N	. <u>PH</u>	3-10B-00						Department of Transpo	ortati	on	
PROJEC	T SR	395 North Spokane Corridor	Proje	ct				Job No. XL0715			
	Spo	kane, Washington						S.R. 395		-	
Station	33	9+87.096		0	ffse	et1	51.28	C.S			
Equipme	nt Mo	prooka MST-1100		С	asiı	ng		Ground El2202.2 (671.23 m)			
Method o	f Boring	HWT/HQ Casing Advance	e					***************************************			
Start Dat	Nov	rember 27, 2000		Com	ple	tion Da	te <u>Nov</u>	vember 27, 2000 Sheet 3 of 6			
Depth (ft) Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6"/SPT (N)	Description of Material	Groundwater	Instrument	
25	X X X X X X X X X X X X X X X X X X X		100 0	R1		RUN 1		SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition, slickensided. (Mc)		SKRKKKKKKKKKKKK	
30	X X X X X X X X X X X X X X X X X X X		100 3	R1		RUN 3		SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition, slickensided. (Mc)		\sim \sim	ч
54 PS: 1077/9 10	X X X X X X X X X X X X X X X X X X X					D-8	4	SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are closely spaced as partings along bedding, and in very poor condition, slickensided. (Mc)			
35 — 11 — 12 40 —	X X X X X X X X X X X X X X X X X X X		100 0	R1		RUN 4	6 10 (16)	SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding, and in poor condition. (Mc) SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are moderately spaced as partings along bedding, and in poor condition. (Mc)	-		

HOLE No. PH3-10B-00

ROCKN INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:47:35 PS

Washington State
Department of Transportation

Sheet 4 of 6 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Test Data & Blows/6"/SPT (N) **Rock Quality** Sample Type Sample No. Meters (m) € Designation Depth Rec. Description of Material (%) FPF - 13 2 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are very closely spaced as partings 45 along bedding at 0 to 3 degrees to horizontal, and in poor condition. (Mc) R1 **RUN 6** 100 SILTSTONE, dark brown, fine grained, slightly - 15 weathered, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along 50 bedding, and in fair condition. (Mc) D-9 7 11 29 (40)**RUN 7** 100 SILTSTONE, dark brown, fine grained, slightly weathered, very weak rock (R1), potential for slaking. Discontinuities are widely spaced as partings along 55 bedding, and in fair condition. (Mc) R1 **RUN 8** 100 CLAYSTONE, grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are 60 moderately spaced as partings along bedding at 0 to 3 degrees to horizontal, and in poor condition, slickensided, polished vertical fractures. (Mc) R1 RUN 9 100 CLAYSTONE, grayish brown, fine grained, slightly weathered, very weak rock (R1). Discontinuities are 65 closely spaced as partings along bedding at 0 to 3 degrees to horizontal, fractures at 60 to 90 degrees, and in very poor condition, slickensided, diced texture/brittle. (Mc) 100

Washington State
Department of Transportation

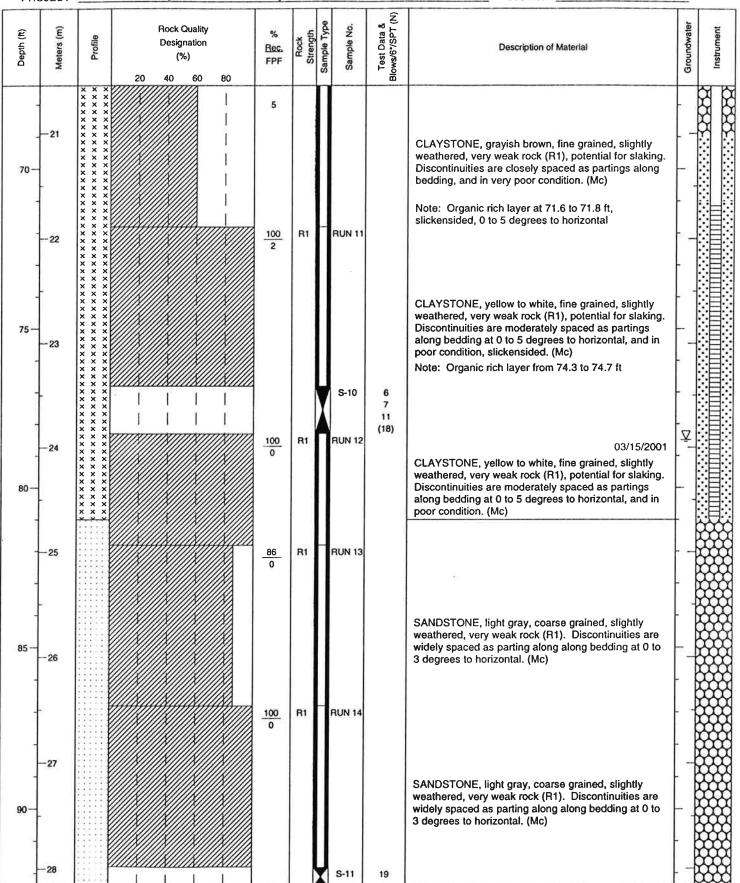
HOLE No. PH3-10B-00

5/22/01•2:47:36

ROCKN I:\PROJECT\244\006\WSDOTPH3.GPJ WSDOT.GDT

PROJECT SR395 North Spokane Corridor Project

Sheet 5 of 6 Job No. XL0715



HOLE No. PH3-10B-00

ROCKN INPROJECT 244006 WSDOTPH3.GPJ WSDOT, GDT 5/22/01-2:47:37 PS

Washington State
Department of Transportation

Sheet 6 of 6 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

PR	OJECT	2013	95 Nortl	п Бро	kane C	omidoi	r Proje	Ct	_			Job NoXL0715		
Depth (ft)	Meters (m)	Profile	20	Desig	Quality gnation %)	80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
95 –	-29						57 0	R1	X	RUN 15	24 26	SANDSTONE, light gray, coarse grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced as parting along along bedding at 0 to 3 degrees to horizontal. (Mc)		
100 -	-30						100	R1		RUN 16	·	SANDSTONE, light gray, coarse grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced as parting along along bedding at 0 to 3 degrees to horizontal. (Mc)		
105 —	-31						100	R1		S-12 RUN 17	21 24 27 (51)	SANDSTONE, light gray, coarse grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced as parting along along bedding at 0 to 3 degrees to horizontal. (Mc)	-	
110-	-33						80 0	R1		RUN 18		SANDSTONE, light gray, coarse grained, slightly weathered, very weak rock (R1). Discontinuities are widely spaced as parting along along bedding at 0 to 3 degrees to horizontal. (Mc)		
115	-34 -35		 	 - - - - - - -										

Washington State
Department of Transportation

	OLE No.		3-11-01 195 North		Corridor	Projec	et			Job NoXL0715		
				shington						S.R. 395		
Sta	ation _	343	3+00.441				c	Offset	-0.17	C.S		
Equ	uipment	Мо	rooka M	ST-1100			c	asing		Ground El	n)	
Ме	thod of B	oring	HWT	/HQ Casing	g Advanc	e						
Sta	rt Date	Janu	uary 25, 2	2001			Com	pletion	n Date	January 26, 2001 Sheet 1 of 3		
Depth (ft)	Meters (m)	Profile	10	Standard Penetration Blows/ft 20 30	40	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Inettriment
9	-1	· · · · · · · · · · · · · · · · · · ·								SILT with gravel and scattered cobbles and boulders, medium dense, brown, moist. (Qmw)		SKKK
5-	-2					6 7 12 (19)	X	D-1		GRANITE, greenish gray and yellowish red, medium grained, highly altered, very weak rock (R1). Material is medium dense, moist, (Tkia)	-	KKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKK
10 —	-3	「ハーハーハーハーハー クーク・クーク・クーク]]] []			6 12 17 (29)	X	D-2		GRANITE, greenish gray and yellowish red, medium grained, highly altered, very weak rock (R1). Material is medium dense, moist, (Tkia)		RECENTATION
15 —	-5	ンケーンケーンケーンケーンケー				8 10 17 (27)	X	D-3		GRANITE, greenish gray and yellowish red, medium grained, highly altered, very weak rock (R1). Material is medium dense, moist, (Tkia)		THE STATE STATE STATES AND A STATES AND A STATE STATES AND A STATE STATES AND A STATE STATES AND A STATE STATE STATES AND A STATE STATE STATES AND A STATE STATE STATE STATE STATE STATES AND A STATE STATE STATE STATE STATE STATES AND A STATE S

Soil drilling halted due to rock. Log continues ragure A-20 Page (1 of 3) following page.

	OLE No.		1 h Spokane Corri	idor Proje	ect				Job No. XL0715		
; ;	ROJECT	Spokane, Wa		idoi Fioje					Job No. XL0715 S.R. 395		
St	tation _	343+00.441		-11-17		Offse	et().17	c.s		
Ed	quipment	Morooka M	IST-1100		C	Casir	ng		Ground El	-	
М	ethod of E	Boring HWT.	/HQ Casing Adv	ance							
St	tart Date	January 25, 2	2001		Com	plet	ion Dat		nuary 26, 2001 Sheet 2 of 3		
Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
25	-7	1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0		100	R1	Y	D-4	6 16 22 (38)	GRANITE, dusky yellow and light gray with dark red, medium grained, highly altered, very weak rock (R1). Discontinuities are closely spaced and in poor condition. (Tkia) (RQD=0)		KEKKEKKEKKEKKEKKEKKEK
	-8			100	R1	X	D-5 RUN 2	10 50/4*	GRANITE, dusky yellow and light gray with dark red, medium grained, highly altered, very weak rock (R1). Discontinuities are closely spaced and in poor condition. (Tkia) (RQD=0)	-	
ROCKN I:PROJECT244/006/WSDOTPH3.GPJ WSDOT.GDT \$/22/01-2:47:55 P5	10	7- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1-		100	R1	X	D-6 RUN 3	10 26 50 (76)	GRANITE, dusky yellow and light gray with dark red, medium grained, highly altered, very weak rock (R1). Discontinuities are closely spaced and in poor condition. (Tkia) (RQD=0)		KKEKKKKKKKKKKKKKKKKKKKK
:T1244\006\WSDOTPH3.GP	-11	トルークークークー		100	R1	Ų	D-7 RUN 4	50/5*		- 	XXXXXXX
ROCKN I:VPROJEC	- 12	シングラ							GRANITE, dusky yellow and light gray with dark red, medium grained, highly altered, very weak rock (R1). Discontinuities are closely spaced and in poor condition. (Tkia) (RQD=0)		XXXX

Washington State Department of Transportation

HOLE No. PH3-11-01

3 Sheet of

PROJECT SR395 North Spokane Corridor Project

Job No. XL0715

Depth (ft)	Meters (m)	Profile	20	Desig	Quality gnation %) 60	80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	
45 —	-13					-	100 2	R1		D-8 RUN 5	14 39 50/3	GRANITE, dusky yellow and light gray with dark red, medium grained, highly altered, very weak rock (R1). Discontinuities are closely spaced and in very poor condition. (Tkia) Note: Rock strength increases at 44.5 ft	-	
50-	- 14 15						100 3	R3		RUN 6		Note: Granite is pegmatitic, white and pale red purple, fresh, strong rock (R4), at 47.5 to 48.0 ft GRANITE, dusky yellow and light gray with dark red, medium grained, moderately altered, moderately strong rock (R3). Discontinuities are closely spaced as fractures at 25 to 30 degrees to horizontal, and in poor condition. (Tkia)		
	— 16						95	R3		RUN 7		Note: Granite is pegmatitic, white and pale red purple, fresh, strong rock (R4), at 48.5 to 49.0 ft and 50 to 50.5 ft GRANITE, dusky yellow and light gray with dark red, medium grained, moderately altered, moderately strong rock (R3). Discontinuities are closely spaced, and in poor condition. (Tkia)		
55-	-17)- '- '- '/ '- '-			 							Note: Granite is pegmatitic, white and pale red purple, fresh, strong rock (R4), at 55.0 to 56.0 ft		
60-	-18												-	
-	-19				1									

Washington State
Department of Transportation

HOLE No		-12-00 5 North Spokane	Corridor Pro	ject			Job No. XL0715		
	Spoka	nne, Washington					S.R. 395		
Station	348	+28.560			Offset	16.13	C.S		
Equipmer	nt <u>B-61</u>				Casing	, -111	Ground El)	
Method of	of Boring	нwт/но							
Start Date	e Nove	mber 17, 2000		Со	mpletio	n Date	November 18, 2000 Sheet 1 of 3		
Depth (ft) Meters (m)	Profile	Standard Penetration Blows/ft 10 20 30	SP Blow: (N	s/6" =	Sample No.	Lab	Description of Material	Groundwater	
5					U-1		Poorly graded silty SAND, medium dense, light brown, moist, homogeneous. (Qes) GRANITE, gray and pale yellow, medium grained, highly		
15-	からないからないないないから		>> \$\bigsize \text{35} \\ 50/5 \\ \\ \\ \\ \\ \\ \\ \\		D-3		altered/soil-like, very weak rock (R1). Material is very dense, moist, (Tkia) GRANITE, gray and pale yellow, medium grained, highly altered/soil-like, very weak rock (R1). Material is very dense, moist, (Tkia)		
-6	ななな								

Soil drilling halted due to rock. Log continues regure A-21 Page (1 of 3) following page.

	но	LE No.	PH3	3-12-00						Dopartment of Harispe	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	PR	OJECT	SR39	95 North Spokane Corr	idor Proj	ect				Job No. XL0715		
			Spok	ane, Washington						S.R. 395		
	Sta	tion _	348	+28.560		_ (Offs	et <u>1</u>	6.13	C.S		
	Equ	uipment	B-6			_ (asi	ng		Ground El		
	Met	thod of E	Boring	_HWT/HQ								
	Sta	rt Date	Nove	mber 17, 2000		Соп	nple	tion Da	te <u>Nov</u>	vember 18, 2000 Sheet 2 of 3		
	Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
ROCKN I:/PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/72/01-2:48:08 PS	25 —	-7 -8 -10		20 40 60 80	80 2 80 2	R4 R4 R1		D-4 RUN 1	50/0*	GRANITE, very light gray and dark olive green, medium grained, slightly weathered, strong rock (R4). Discontinuities are moderately spaced, and in fair to good condition. (Tkia) GRANITE, very light gray and dark olive green, medium grained, slight to moderately weathered, moderately weak rock (R2). Discontinuities are close to very closely spaced, and in fair to poor condition. (Tkia) GRANITE, very light gray, light gray, olive green, and dark red, medium to coarse grained, slight to moderately weathered, moderate to strong rock (R4). Discontinuities are closely spaced, and in poor to good condition. (Tkia) GRANITE, light gray, dark gray, and dark red, medium to coarse grained, highly weathered, very weak rock (R1). Discontinuities are very closely spaced, and in very poor condition. (Tkia)		
ROCKN IN		—12	10								-	

Washington State Department of Transportation

Figure A-21 Page (3 of 3)

3 of Sheet XL0715 Job No.

PH3-12-00 HOLE No.

ROCKN I:/PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01*2:48:10 P5

PROJECT SR395 North Spokane Corridor Project

Test Data & Blows/6"/SPT (N) **Rock Quality** Sample Type Meters (m) Sample No. Depth (ft) Rock Strength Profile Designation Rec. Description of Material (%) FPF 60 80 40 R2 RUN 5 60 10 GRANITE, very light gray and dark olive green, medium grained, slight to moderately weathered, moderately weak rock (R2). Discontinuities are close to very closely spaced, and in fair to poor condition. 13 (Tkia) (RQD=0) 45 0 RUN 6 R2 very poor recovery R1 RUN 7 90 GRANITE, light gray and olive gray, medium grained, very weak rock (R1). Discontinuities are closely spaced, and in poor to very poor condition. (Tkia) 50 16 18 60 -19

Spokane, Washington Station 353+97.370 Offset Equipment Morooka MST-1100 Casing Method of Boring HWT/HQ Start Date January 27, 2001 Completion Blows/ft Blows/ft Blows/ft (N) Spr Blows/ft	Spokane, Washington S.R. 395 Station 353+97.370 Offset -0.18 C.S.	Spokane, Washington Spokane, Washington Station Spokane, Washington Station Station Spokane, Washington Completion Ground El 2014.8 (614.11 m) Morooka MST-1100 Casing Ground El 2014.8 (614.11 m) Mothod of Boring HWT/HO Stan Date Standard Penersation Blows/II 10 20 30 40 Penersation Blows/II 10 20 30 40 Spokane, Washington Standard Penersation Blows/II 10 20 30 40 Spokane Spokane Standard Penersation Blows/II 10 20 30 40 Spokane Standard Penersation Blows/II 10 20 30 40 Standard Penersation Blows/II 10 4 Description of Material Blows/II 10 4 Standard Penersation Blows/II 10 4 Standard Penersation Blows/II 10 4 Description of Material Blows/II 10 4 Standard Penersation Blows/II 10 4 Description of Material Blows/II 10 4 Standard Penersation Blows/II 10 4 Description of Material Blow
Spokane, Washington 353+97.370 Offset Morooka MST-1100 Casing of Boring HWT/HQ ate January 27, 2001 Standard Penetration Blows/ft (N) 10 20 30 40 SPT Blows/6 (N) 10 20 30 40 Deliver the standard Penetration Blows/ft (N) I I I I I I I I I I I I I I I I I I I	Spokane, Washington S.R. 395	Spokane, Washington S.R. 395
Standard Penetration Blows/ft 10 20 30 40 40 40 40 40 40 4	S.R. 395 397.370 Offset -0.18 C.S.	S.R. 395 3497.370 Offset -0.18 C.S.
Standard SPT Blows/6" Reputation Blows/ft SON Deputation SPT SON Deputation	Strington S.R. 395	Standard SPT Blows/S (N) Standard SPT Blows/S (N) Standard SPT Standard Standard SPT Standard Standard SPT Standard Standard Standard SPT Standard
Offset Casing Completion SPT Blows/6* (N) SPT Blows/6* (N) Gard Offset Casing Completion Offset Double Casing Completion Offset Double Casing Offset Double Casing Offset Casing Double Casing Offset Casing Double Casing Offset Offset Offset Double Casing Offset Offset	Offset	Offset
Completion SPT Blows/6* (N) Sample Jype S Completion Sample Jype S Completion (N) Completion (N) D-1 14 16 20 (36)	Completion Date January 27, 2001 Sheet 1 of 4 Completion Date January 27, 2001 Sheet 1 of 4	S.R. 395 Offset0.18
Offset Casing Sample Type Sample No.) Completion (Tube No.)	S.R. 395 Offset0.18	S.R. 395 Offset
Offset Casing On pletion (on equ.)	S.R. 395 Offset	S.R. 395 Offset -0.18 C.S. Casing Ground El 2014.8 (614.11 m) Opletion Date January 27, 2001 Sheet 1 of 4 Description of Material SILT with scattered sand and gravel, dark brown, moist, homogeneous, grass roots Sandy SILT with gravel, boulders and cobbles, brown, moist. (Qrmw) GRANITE, yellow and dark red, medium grained, completely altered/soil-like, very weak rock (R1). Material is dense, moist, (Tkia) D-2 GRANITE, yellow and dark red, medium grained, completely altered/soil-like, very weak rock (R1). Material is dense, moist, (Tkia)
	S.R. 395 -0.18 C.S. Ground El 2014.8 (614.11 m) Date January 27, 2001 Sheet 1 of 4 Description of Material SILT with scattered sand and gravel, dark brown, moist, homogeneous, grass roots Sandy SILT with gravel, boulders and cobbles, brown, moist. (Qmw) GRANITE, yellow and dark red, medium grained, completely altered/soil-like, very weak rock (R1). Material is dense, moist, (Tkia)	S.R. 395 -0.18 C.S. Ground El 2014.8 (614.11 m) Date January 27, 2001 Sheet 1 of 4 Description of Material SILT with scattered sand and gravel, dark brown, moist, homogeneous, grass roots Sandy SILT with gravel, boulders and cobbles, brown, moist. (Qmw) GRANITE, yellow and dark red, medium grained, completely altered/soil-like, very weak rock (R1). Material is dense, moist, (Tkia)

HOLE No. PH3-13-01

Washington State
Department of Transportation

Figure A-22 Page (2 of 4)

Sheet 2 of 4
Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

	7	Г	T					П		_	_	300 No. 7420770	_	-
Depth (ft)	Meters (m)	Profile	10		dard ration vs/ft 30	40	SPT Blows/6* (N)	Sample Type		Lab	Tests	Description of Material	Groundwater	Instrument
		だが	1	1		>>	50/5*	X	D-3			GRANITE, yellow and dark red, medium grained, completely altered/soil-like, very weak rock (R1). Material is very dense, moist, (Tkia)		
84						1						Soil drilling halted due to rock. Log continues on following page.	-	•*• •*•
	7													
25-				1		1							-	
	8]							-	
				 		1								
30	-9			·		1							-	
3						1							-	
	10			 	 								-	
i.e						1							-	
35	11				 							<i>l</i> *.	-	
			1	1										
-														
40-	12			i									-	
	-		1	i]									
	-13]								-	
			1	1	l L									

	НО	LE No.	PH3-13-01						Department of Hallsp	Ortan	JI1	
	PR	OJECT	SR395 North Spokane Corri	dor Proje	ct				Job No. XL0715			
			Spokane, Washington						S.R. 395			
	Sta	ition _	353+97.370			Offs	et	0.18	C.S			
	Equ	uipment	Morooka MST-1100		C	asi	ing	1	Ground El			
	Met	thod of E	foring HWT/HQ									
	Sta	rt Date	January 27, 2001		Com	ple	tion Da		suary 27, 2001 Sheet 3 of 4			_
	Depth (ft)	Meters (m)	Rock Quality Designation (%) 20 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument	Water Strategy and Strategy and Strategy
-		-7		20 3	R1	-	RUN 1		GRANITE, yellow and dark red, medium grained, completely altered, very weak rock (R1).			
	25-	-8		20 >12	R1		RUN 2		Note: Granite is pegmatitic, light gray and dark gray, fresh, strong rock, at 25.5 to 26.5 ft 03/15/2001	_ Ā		
	30 —	9							GRANITE, yellow and dark red, medium grained, completely altered, very weak rock (R1). (Tkia) (RQD=0)			
21 PS	-	_10		80 2	R1		RUN 3		Note: Granite is pegmatitic, light gray and dark gray, fresh, strong rock, at 30.75 to 31.5 ft			
T.GDT 5/22/01•2:48:	35-								GRANITE, dusky yellow, medium grained, moderately weathered, very weak rock (R1). Discontinuities are closely spaced, and in poor condition. (Tkia)			
отрнз. дру wsdo.	1987	11		50 >12	R1		RUN 4		Note: Granite is pegmatitic, white and pale red purple, fresh, moderately strong rock, at 35 to 37 ft			
ROCKN I:PROJECT1244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01+2:48:21 P5	40-	12 							GRANITE, dusky yellow, medium grained, moderately weathered, very weak rock (R1). Discontinuities are closely spaced, and in poor to very poor condition. (Tkia)			

Washington State
Department of Transportation

HOLE No. PH3-13-01

PROJECT SR395 North Spokane Corridor Project

Sheet 4 of 4 Job No. XL0715

Depth (ft)	Meters (m)	Profile	20	Rock (Design	nation 6)	80	% Bec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
	-13	1.4.4.4.4	 	I I I I			0	R1		RUN 5		no core recovery	-	
45 —	14	(-/(-/(-//-//-//-//-//-//-//-//-//-//-//			 	 	50 1	R1		RUN 6			-	
50 —	—15					 						GRANITE, dusky yellow, medium grained, completely weathered, very weak rock (R1). Discontinuities are moderately spaced, and in fair to very poor condition. (Tkia)		
	— 16	() () () () () () () () () ()					90 3	R3		RUN 7		GRANITE, light gray and dark gray and pale red purple, medium grained, slightly weathered, moderately strong rock (R3). Discontinuities are		
55 —	—17	7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7					100 2	R4		RUN 8		closely spaced as fractures at 10 to 60 degrees to horizontal, and in good to fair condition. (Tkia)	-	
60 —	18	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-										GRANITE, light gray and dark gray and pale red purple, medium grained, fresh, strong rock (R4). Discontinuities are closely spaced as fractures at 0 to 45 degrees to horizontal, and in good to poor condition. (Tkia)	-	
-	— 19 -		 	 									-	
65 —	20		 	 									-	

HOLE No.	DP-10-00					Department of Trans	portation
PROJECT	SR395 North Spokane Co	rridor Project				Job No. XL0715	
	Spokane, Washington					S.R. <u>395</u>	
Station	358+69.150		Offset	-489.8	81	C.S	
Equipment	Morooka MST-1100		Casing			Ground El1955.1 (595.91 m	1
Method of I	Boring HWT/HQ Casing Ac	dvance					
Start Date	November 30, 2000	Co	mpletion	Date	November 30, 2000	Sheet1 of4	
Depth (ft) Meters (m)	Standard Penetration Blows/ft 10 20 30 40	SPT Blows/6* G(N)	Sample No.	Lab	c	Description of Material	Groundwater
	25 ST				SILT with sand and a homogeneous	grass roots, dark brown, moist,	
SOIL I:PROJECT244/006/WSDOTPH3.GPJ WSDOT.GDT S/22/01•2:21:06 P5		4 5 5 (10) 4 5 7 (12)	D-1		Silty SAND, medium HCL reaction. (Qes)	dense, strong brown, moist, CL reaction. (Qes) dense, brown, moist, bedded, no	

Washington State
Department of Transportation

Figure A-23 Page (2 of 4)

HOLE No. DP-10-00

PROJECT SR395 North Spokane Corridor Project

Sheet 2 of 4 Job No. XL0715

Silty SAND, brown, medium dense, moist, bedded, no HCL reaction. (Qes) Silty SAND, brown, medium dense, moist, bedded, no HCL reaction. (Qes) Sandy SiLT, brown, medium dense, moist, laminated, no HCL reaction. (Qes) Sandy SiLT, brown, medium dense, moist, laminated, no HCL reaction. (Qes) Poorly graded SAND with gravel, subrounded, very dense, homogeneous, no HCL reaction. (Qf) Wall graded SAND with trace of gravel, subrounded, dense, brown, homogeneous, no HCL reaction. (Qf)	Depth (ft)	Meters (m)	Profile	10	Pene	ndard tration ws/ft 30	40	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab	Tests	Description of Material	Groundwater	Instrument
Sandy SILT, brown, medium dense, moist to wet, laminated, no HCL reaction. (Qes) D-7 Poorly graded SAND with gravel, subrounded, very dense, homogeneous, no HCL reaction, (Qf)		-7			♦ 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9	X	D-4			Silty SAND, brown, medium dense, moist, bedded, no HCL reaction. (Qes)		
Sandy SILT, brown, medium dense, moist to wet, laminated, no HCL reaction. (Qes) D-7 Poorly graded SAND with gravel, subrounded, very dense, homogeneous, no HCL reaction, (Qf)	25 —			1	Į,	1	1	8	Y	D-5			Silty SAND, brown, medium dense, moist, bedded, no HCL reaction. (Qes)		
Sandy SIL1, brown, medium dense, moist to wet, laminated, no HCL reaction. (Qes) D-7 Poorty graded SAND with gravel, subrounded, very dense, homogeneous, no HCL reaction, (Qf)				1 1 1		1 1 1 1 1			A				Sandy SILT, brown, medium dense, moist, laminated, no HCL reaction. (Qes)	-	
Poorly graded SAND with gravel, subrounded, very dense, homogeneous, no HCL reaction, (Qf)	30	-10			•			8 10	X				Sandy SILT, brown, medium dense, moist to wet, laminated, no HCL reaction. (Qes)	-	
Well graded SAND with trace of gravel, subrounded, dense, brown, homogeneous, no HCL reaction, (Qf)		-11					>>	29 26	X	D-8			Poorly graded SAND with gravel, subrounded, very dense, homogeneous, no HCL reaction, (Qf)		
	40-							14 18	X	D-9			Well graded SAND with trace of gravel, subrounded, dense, brown, homogeneous, no HCL reaction, (Qf)		

Washington State
Department of Transportation

Figure A-23 Page (3 of 4)

HOLE No. DP-10-00

PROJECT SR395 North Spokane Corridor Project

Sheet 3 of 4 Job No. XL0715

	OJEGI						rrojec					JOD NOXL0713		
Depth (ft)	Meters (m)	Profile	10	Stand Penetr Blow	ation	40	SPT Blows/6* (N)	Sample Type	Sample No. (Tube No.)	Lab	5150	Description of Material	Groundwater	instrument
	-14		-		 	>>* 	50/4*	X	D-10			Well graded SAND with scattered cobbles, subrounded, very dense, brown, homogeneous, no HCL reaction, (Qf) Soil drilling halted due to rock. Log continues on following page.		∵⊟∵
50 -	— 15		 	 		 								
	- 16			 	1 - 1 - 1	 - - -								
55 -	- 17				 								-	
60-	— 18		 											
-	— 19				 									
65	-20				 	 			ě				-	
-	21		 	 										
70				1	1	ı l								

	НС	DLE No.	DP-10-00						Department of Transp	ortati	on
	PR	OJECT	SR395 North Spokane	Corridor Proje	ect				Job NoXL0715		
			Spokane, Washington						S.R. 395		
	Sta	ation _	358+69.150			Offs	et	489.81	C.S		
	Eq	uipment	Morooka MST-1100		C	asi	ing		Ground El1955.1 (595.91 m)		
	Ме	thod of B	Boring HWT/HQ Casin	g Advance							
	Sta	rt Date	November 30, 2000		Com	ple	tion Da	te <u>No</u>	vember 30, 2000 Sheet 4 of 4		
	Depth (ft)	Meters (m)	Rock Quality Designation (%) 20 40 60	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
		14		<u>80</u>	R1		RUN 1		Well graded SAND with scattered cobbles, subrounded, very dense, brown, homogeneous, no HCL reaction, (Qf)	-	
	50 -	— 15 — 16			R1		RUN 2		GRANITE, yellowish red, coarse grained, completely weathered, very weak rock (R1) with zone of moderately weak rock (R2), potential for slaking. Discontinuities are closely spaced as fractures at 40 to 60 degrees to horizontal, and in very poor condition. (Tkia) Note: Core loss due to washout No determinatin of RQD.		
•2:46:33 P5	55	-17		60 4	R1		RUN 3		#3 140		
GPJ WSDOT.GDT 5/22/01	60 —	18							GRANITE, yellowish red, coarse grained, completely weathered, very weak rock (R1) with zone of moderately weak rock (R2), potential for slaking. Discontinuities are closely spaced as fractures at 40 to 60 degrees to horizontal, and in very poor condition. (Tkia)		
ROCKN !:\PROJECT244\006\WSDOTPH3.GPJ WSDOT.GDT 5/22/01*2:46:33 P5		—19 -									
ROCKN IS	65 —			1						_	

Washington State

Department of Transportation PH3-14-00 HOLE No. PROJECT SR395 North Spokane Corridor Project XL0715 Job No. Spokane, Washington S.R. 395 361+65.202 Station Offset 89.14 C.S. B-61 Equipment Ground El 1976.1 (602.32 m) Casing Method of Boring HWT/HQ Start Date November 17, 2000 Completion Date November 18, 2000 Sheet Sample Type Standard $\widehat{\mathbb{E}}$ Sample No. (Tube No.) SPT Instrument Depth (ft) Profile Tests Meters (Lab Penetration Blows/6 Description of Material Blows/ft 30 40 SILT with sand, dark brown, moist, homogeneous, grass D-1 0 Silty SAND, loose, light brown, moist, homogeneous, 2 (Qes) 3 (5) 10 21 D-2 Silty SAND, medium dense, light brown, moist, 14 homogeneous (Qes) 9 (23)15 D-3 Silty SAND, medium dense, light brown, moist, 12 homogeneous, (Qes) 15 (27)

I:PROJECT244(006)WSDOTPH3.GPJ WSDOT.GDT 5/22/01+2:23:29 PS

SOIL

Figure A-24 Page (1 of 4)

HOLE No. PH3-14-00

I:/PROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01+2:23:30 PS

Washington State
Department of Transportation

Figure A-24 Page (2 of 4)

Sheet 2 of 4 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Standard Ê Sample Type Sample No. (Tube No.) £ SPT Lab Penetration Depth Blows/6 Description of Material Blows/ft (N) 20 10 30 Silty SAND, medium dense, light brown, moist, 5 D-4 8 homogeneous, (Qes) 6 (14)Silty SAND, medium dense, light brown, moist, 25 homogeneous, (Qes) D-5 4 GRANITE, highly altered, very weak rock (R1). Soil-like, 11 dark red and light gray, white, medium dense, (15)moist.(Tkia) 30 D-6 GRANITE, highly altered, very weak rock (R1). Soil-like, 20 dark red and light gray, white, dense, moist.(Tkia) 21 (41)35 D-7 14 GRANITE, highly altered, very weak rock (R1). Soil-like, 17 dark red and light gray, white, dense, moist.(Tkia) 18 (35)12 40 U-1 GRANITE, highly altered, very weak rock (R1). Soil-like, 50/3* D-8 dark red and light gray, white, medium dense, moist.(Tkia) 13 Soil drilling halted due to rock. Log continues on following page.

	нс	LE No.	PH	3-14-0	0									Department of Transp	ortat	tion
×	PR	OJECT	SR3	95 Nort	h Spo	kane (Corrido	or Proje	ct					Job No. XL0715		
			Spok	ane, Wa	ashing	iton								S.R. 395		
	Sta	ition	361	+65.202	2				c	Offse	et 8	9.14		c.s		
	Foi	uipment	B-6	:1						asi						
							1000		·	asii	g			Glodild El		
		thod of B		HWT					-							
Г	Sta	rt Date	Nove	ember 17	7, 2000				Com	ple	tion Da	_	vember 18, 2000	Sheet3 of4		
	Depth (ft)	Meters (m)	Profile	20	Rock (Design	nation	80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)		Description of Material	Groundwater	Instrument
). - -		ľ,	1	1	100 >12	R1		RUN 1		GRANITE, highly Soil-like, dark red dense, moist.(Tki	r altered, very weak rock (R1). d and light gray, white, medium ia)		
	45-	14						100	R4		RUN 2		CDANITE valley	ink annual links live annu	-	
	50 —	– 15	シーシーシーシーシー					100	R4		RUN 3		medium and coar	rish gray and light olive gray, se grained, fresh, strong rock (R4). e closely spaced, and in fair to poor	-	
3 PS		—16	・ハーハーハー					1					coarse grained, fr	ray and very light gray, medium and esh, strong rock (R4). e moderately spaced, and in good to cia)	-	
SDOT.GDT 5/22/01•2:48:3	55-	-17	ハーン・フィーン・					100	R4		RUN 4				-	
ROCKN I.PROJECTI244(006)WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:48:33 PS	60-	-18	コントーン・コントーク										coarse grained, fro	ray and very light gray, medium and esh, strong rock (R4). e moderately spaced, and in good		
ROCKN I:PROJECT24		-19	ハーシーシーク					100	R4		RUN 5		GRANITE, very lig	ght gray and medium light gray, light	-	

HOLE No. PH3-14-00

ROCKN I:\PROJECT\244\006\WSDOTPH3.GPJ WSDOT.GDT 5\22\01+2:48:34 PS

Washington State
Department of Transportation

Sheet 4 of 4 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Test Data & Blows/6*/SPT (N) Rock Quality Sample Type Meters (m) Sample No. Depth (ft) Rock Strength % Profile Designation Rec. Description of Material (%) FPF 40 60 gray, medium and coarse grained, fresh, strong rock (R4). Discontinuities are moderately spaced, and in good condition. (Tkia) 65 20 21 70 22 75 23 -24 80 25 85-26

Washington State
Department of Transportation

Figure A-25 Page (1 of 4)

HOLE No.	PH3-15-00				Department of Transpo	rtatio	n
PROJECT	SR395 North Spokane Corrido	or Project			Job No. XL0715	_	
	Spokane, Washington				S.R. 395		
Station	366+86.700		Offset	5.50	C.S		
Equipment	Morooka MST-1100		Casing		Ground El1944.4 (592.65 m)		
Method of Bo	oring HWT/HQ Casing Advar	nce					
Start Date	November 28, 2000	Co	mpletio	n Date	November 28, 2000 Sheet 1 of 4		
Depth (ft) Meters (m)	Standard Penetration Blows/ft 10 20 30 40	SPT Blows/6*	Sample lype Sample No.	Lab	Description of Material	Groundwater	Instrument
SOIL I:PROJECT244\006\WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:23:42 P5		6 9 10 (19)	D-1		Silty SAND, medium dense, grayish brown, moist, (Qes) Poorly graded, fine to medium SAND, medium dense, dark gray, moist, homogeneous (Qes) SAND with gravel, medium dense, cemented, includes quartz and feldspar and mica grains. (Qes) Poorly graded, fined to medium SAND, grayish brown, moist, homogeneous (Qes) Silty SAND, medium dense, grayish brown, moist, homogeneous. (Qes)		

HOLE No. PH3-15-00

INPROJECT/244006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01+6:02:58 P5

Washington State
Department of Transportation

Figure A-25 Page (2 of 4)

Sheet 2 of 4 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Sample Type Standard Sample No. Meters (m) (Tube No.) £ SPT Instrument Tests Depth (Penetration Blows/6 Description of Material Blows/ft (N) 10 20 30 40 11 D-4 Poorly graded SAND interbedded with silt, medium 10 dense, brown and pale brown, moist, laminated, (Qes) 12 (22)25 D-5 Silty SAND, medium dense, brown, moist, homogeneous, 4 (Qes) 8 (12)30 12 D-6 Well graded SAND, dense, brown, moist, homogeneous, 18 (Qf) 18 (36)10 Lean CLAY, hard, pale brown, moist (Qf) 35 GRANITE, gray and light olive brown, dark red, medium 50/3* D-7 grained, highly altered, very weak rock (R1). Discontinuities are moderately spaced and in poor condition. (Tkia) Soil drilling halted due to rock. Log continues on following page. 12 40 13

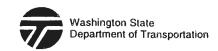
Washington State
Department of Transportation

НО	LE No.	PH3	3-15-00						Department of Transpo	ortati	on
PR	OJECT	SR39	95 North Spokane	Corridor Proje	ct				Job No. XL0715	_	
		Spok	ane, Washington						S.R. 395		
Sta	tion _	366	+86.700			ffse	et5	5.50	C.S		
Equ	uipment	Mor	ooka MST-1100		C	asi	ng		Ground El 1944.4 (592.65 m)		
Met	hod of B	oring	HWT/HQ Casing	Advance							
Sta	rt Date	Nove	ember 28, 2000		Com	ple	tion Dat		ember 28, 2000 Sheet 3 of 4		
Depth (ft)	Meters (m)	Profile	Rock Quality Designation (%) 20 40 60	% <u>Rec.</u> FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
40-	-11 -12			50 1	R1		RUN 1		GRANITE, gray and light olive brown, dark red, medium grained, highly altered, very weak rock (R1). Discontinuities are moderately spaced and in poor condition. (Tkia) GRANITE, gray and light olive brown, dark red, medium grained, highly altered, very weak rock (R1).	-	
45	14			100	R2		RUN 3		Discontinuities are moderately spaced and in poor condition. (Tkia) GRANITE, light gray and dark gray, medium and coarse grained, slightly weathered, moderately weak rock (R2). Discontinuities are moderately spaced, and in good condition. (Tkia)		
50 —	16	ハー・ハー・ハー・ハー・ハー・ハー・ハー・クー・クー・クー・クー・クー・クー・クー・クー・クー・クー・クー・クー・クー		<u>86</u>	R1		RUN 4		GRANITE, light gray and dark gray, medium grained, highly altered, very weak rock (R1). Discontinuities are closely spaced, and in poor condition. (Tkia)		

ROCKN I:PROJECT244\006\WSDOTPH3.GPJ WSDOT.GDT 5/22/01*2:48:45 P5

PH3-15-00

HOLE No.



Sheet ____4 __ of ___ Job No. ___XL0715

PROJECT SR395 North Spokane Corridor Project

Test Data & Blows/6*/SPT (N) **Rock Quality** Meters (m) Sample No. € % Designation Dapth Rec. Description of Material (%) FPF 80 100 RUN 5 R2 17 2 GRANITE, light gray and dark gray, medium and coarse grained, slightly weathered, moderately weak (R2). Discontinuities are moderately spaced, and in fair condition. (Tkia) 18 60 26 R1 RUN 6 19 GRANITE, light gray and dark gray, medium and coarse grained, slightly weathered, moderately weak (R2). Discontinuities are moderately spaced, and in fair condition. (Tkia) 65 RUN 7 24 R2 20 GRANITE, light gray, medium grained, slightly weathered 70 R2 **RUN 8** 86 GRANITE, very dark gray and white, medium grained, slightly weathered, moderately weak rock (R2). Discontinuities are moderately spaced, and in 22 fair condition. (Tkia) RUN 9 R3 100 GRANITE, light gray, coarse grained, fresh, moderately strong rock (R3). Discontinuities are 75 moderately spaced, and in fair to good condition. **RUN 10** 90 R3 (Tkia) -23 GRANITE, very dark gray and light gray, medium grained, slightly weathered, moderately strong rock (R3). Discontinuities are closely spaced, and in fair 24 condition. (Tkia)

Figure A-26 Page (1 of 3)

ног	E No.	DP-	-11-01			LC	JG OF	- 1551	BORING	Washington State Department of Trans	portatio	on
PRO	DJECT	SR3	95 North Sp	okane Cor	ridor Projec	:t			Jo	b No. XL0715		
		Spok	ane, Washii	ngton		_			S.	R. 395		_
Stat	ion _	368	+01.190			C	Offset	450.1	5 C.	S		
Equ	ipment	Moi	rooka MST-	1100		C	Casing	-	Gr	round El 2007.3 (611.83 m)	
Metl	hod of E	Boring	HWT/HQ	Casing Ad	vance							
Star	t Date	Febr	uary 14, 2001			Con	npletion	Date	February 14, 2001 Sh	neet <u>1</u> of <u>3</u>		
Depth (ft)	Meters (m)	Profile	Per	andard netration lows/ft 30 40	SPT Blows/6* (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Descript	tion of Material	Groundwater	Instrument
		<u>24 24</u>		1 1					Poorly graded fine silty SA dark brown, moist, homog	AND with grass roots, loose, eneous	<i>/</i>	
5	1			 								
-	2		•		4 4 4 (8)	X	D-1		Silty SAND, subrounded to moist, homogeneous	o subangular, loose, brown,	-	
10-	-3										-	
			\		3 3 3 (6)	X	D-2		Silty SAND, subrounded to moist, homogeneous	o subangular, loose, brown,	-	
15-	-4										-	
	-5				3 7 11 (18)		D-3		Sandy SILT, medium dense homogeneous	e, very pale brown, moist,		
+		シッシック			16 18 26 (44)	X	D-4		GRANITE, completely weat Soil-like, reddish brown, co	thered, very weak rock (R1). earse, moist. (Tkia)		

SOIL I:VPROJECTZ44\006\WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:21:22 PS

HOLE No. DP-11-01

Washington State
Department of Transportation

Sheet 2 of 3 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

PROJECT	SR395 North Spokane Corrido	rioject	Job NoXL0715	
Depth (ft) Meters (m)	Standard Penetration Blows/ft 10 20 30 40	Sample Type Sample No. (Tube No.) Lab Tests	Description of Material	Groundwater
-7		8 13 19 (32) D-5	GRANITE, completely weathered, very weak rock (R1). Soil-like, reddish brown, coarse, moist. (Tkia) Soil drilling halted due to rock. Log continues on following page.	
25-				-
30-				-
35-				- - - - -
-12 40-				
13 13				

	HOI	LE No.	DP-	11-01							Department of Trans	portation	on
	PRO	DJECT	_SR39	95 North	Spokane Corrid	lor Proje	ct				Job No. XL0715		
			Spoka	ane, Wa	shington						S.R. 395		
	Stat	tion _	368-	+01.190			0	ffse	et _4	50.15	C.S		
	Equ	ipment	Mor	ooka MS	ST-1100	···	С	asi	ing		Ground El (611.83 m		
	Met	hod of E	Boring	HWT/	HQ Casing Adva	ince							
	Star	t Date	Febr	uary 14, 2	2001		Com	ple	tion Da	te Feb	oruary 14, 2001 Sheet 3 of 3		
	Depth (ft)	Meters (m)	Profile	20	Rock Quality Designation (%) 40 60 80	% Rec. FPF	Rock	Sample Type	Sample No.	Test Data & Blows/6*/SPT (N)	Description of Material	Groundwater	Instrument
	-	-7	シンシン			100	R1		RUN 1		GRANITE, light gray, coarse grained, highly weathered, very weak rock (R1). Discontinuities are closely spaced, and in very poor condition. (Tkia)		
	25-	8	いいいい			100	Rí		D-6 RUN 2	13 15 24 (39)		-	
	30-	9	ングラングラングラング			2					GRANITE, brownish gray, coarse grained, highly weathered, very weak rock (R1). Discontinuities are closely spaced, and in very poor condition. (Tkia)		
31*2:46:40 P5	-	10	に入りいて			100 3	R1		RUN 3		CDANITE dualiza relieur acces and dualiza relieur		
PJ WSDOT.GDT 5/22/	35-	-11									GRANITE, dusky yellow green and dusky yellow, coarse grained, highly weathered, very weak rock (R1). Discontinuities are closely spaced, and in very poor condition. (Tkia)	-	
ROCKN I:PROJECT1244/006/WSDOTPH3.GPJ WSDOT.GDT 5/22/01-2:46:40 P5	40-	– 12	シングング			100 2	R1		RUN 4		GRANITE, dusky yellow green and dusky yellow, coarse grained, highly weathered, very weak rock (R1). Discontinuities are closely spaced, and in very poor condition. (Tkia)	-	
ROCKN IS		2											

НС	LE No.	BP	A-1-01								Department of Transp	Ortain	JI1
PR	OJECT	SR3	95 Norti	h Spokan	e Corrid	or Projec	t			Job No.	XL0715		
		Spok	ane, Wa	shington						S.R. 3	95		
Sta	ation		+85.145					Offset	3 92				
	_												
Eq	uipment	Moi	rooka M	ST-1100			C	asing		Ground E	1945.4 (592.96 m)		
Ме	thod of E	Boring	HWT	/HQ Casir	ig Advai	nce							
Sta	rt Date	Febr	uary 15,	2001			Com	pletion	Date	February 16, 2001 Sheet	1 of 3	_	,
Depth (ft)	Meters (m)	Profile	10	Standard Penetration Blows/ft 20 30	40	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Ma	aterial	Groundwater	Instrument
		11 11 11 11 11 11 11 11 11 11 11 11 11	I		ı	1	П			Silty SAND with grass roots, loose homogeneous	e, dark brown, moist,		
	1		1		1							†	
	-			1 1								- 1	
			1	1 1	1								
	-		1	1 1	 								
5-	-		i	ii	i								
			1		1								
	-2				i								
			•		1	2 2	M	D-1		Poorly graded fine SAND with trac subangular, loose, brown, moist, I	e silt, subrounded to nomogeneous, no HCL		
			- Ni			(5)	A			reaction, (Qes)			
			1!		1								
10-	<u></u> ⊢3											-	
			11		1								
			1		1							-	
	-4		\i	İ	i	3		D-2		Poorly graded fine SAND with trac	e of silt, subrounded to	- 4	
a a			#		 !	4 5	X			subangular, loose, brown, moist, heaction (Qes)	nomogeneous, no HCL		
15-			ľ		İ	(9)						L	
					: I								
	-5		ľ	1 1	 								
					İ					Poorly graded fine SAND with trac subangular, loose, brown, moist, h	e of silt, subrounded to		
-					1	3 4	V	D-3		reaction, (Qes)			
-			1			5 (9)						2	
1	⊢6 l	1111111	- 1	1 1	1	1 1	- 1	- 1				-	

HOLE No. BPA-1-01

Washington State
Department of Transportation

Figure A-27 Page (2 of 3)

Sheet 2 of 3 Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Sample No. (Tube No.) Groundwater Sample Type Standard Depth (ft) Meters (m) SPT Instrument Lab Tests Penetration Blows/6* Description of Material Blows/ft (N) 10 20 30 D-4 Poorly graded fine to medium SAND with trace of silt, 5 subrounded to subangular, medium dense, brown, moist, 6 homogeneous, no HCL reaction, (Qes) Silty SAND, medium dense, pale brown, moist, (11) homogeneous, (Qes) 25 Sandy SILT, dense, pale brown, moist. (Qes) U-1 Silty SAND, medium dense, pale brown, moist, homogeneous, strong HCL reaction, (Qes) Poorly graded fine SAND with trace silt, subrounded to subangular, loose, brown, moist, homogeneous, no HCL reaction, (Qes) 30 D-5 Silty SAND, medium dense, brown, moist, homogeneous, 8 9 no HCL reaction, (Qes) 12 (21)35 -I:\PROJECT244\006\WSDOTPH3.GPJ WSDOT.GDT 5/22/01+2:20:46 P5 D-6 11 Well graded SAND with trace of silt, dense, wet, 19 homogeneous, no HCL reaction, (Qf) (30)12 40 Poorly graded medium to coarse SAND, subrounded to 19 subangular, very dense, grayish brown, wet, 25 13 26 homogeneous, no HCL reaction, (Qf) (51)

HOLE No. BPA-1-01

Washington State Department of Transportation

Sheet <u>3</u> of <u>3</u> Job No. XL0715

PROJECT SR395 North Spokane Corridor Project

Depth (ft)	Meters (m)	Profile	10	Pene	ndard tration ws/ft 30	40	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab	Tests	Description of Material	Groundwater	
50	— 14 — 15					 >>•	24 30 30 (60)		D-8			Poorly graded medium to coarse SAND with trace of silt, subrounded to subangular, very dense, grayish brown, wet, homogeneous, (Qf)		
55	16 					 >>•	24 29 32 (61)	X	D-9			Poorly graded medium to coarse SAND with some fine gravel, very dense, grayish brown, wet, homogeneous, (Qf)		
	— 17 18			 			9 17 24 (41)	X	D-10			Fat CLAY with trace of coarse sand, fine gravel and muscovite, hard, yellow and pale yellow. Residual granite soil.		
60 —	- 19	シーン・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・		 - - - - -			7 25 50/4°		D-11			GRANITE, completely weathered, very weak rock (R1). Soil-like, clayey, medium sand, very pale brown, very hard, moist. (Tkia)	_	
	-20	シーク・ク・ク・ク					8 16 26 (42)		D-12		- 1	GRANITE, completely weathered, very weak rock (R1). Soil-like, clayey, medium sand, very pale brown, very hard, moist. (Tkia)		

Leboretory Teeting

APPENDIX B LABORATORY TESTING

Natural moisture content, sieve analyses, and Atterberg Limit determinations were conducted by WSDOT and by Soil Technology (under subcontract to Landau Associates) on representative samples recovered from the borings. Laboratory testing was performed in general accordance with the American Society of Testing and Materials (ASTM) standard test procedures, which are described below. The samples were checked against the field log descriptions, which were updated where appropriate in general accordance with WSDOT Soil and Rock Classification Guidelines.

Natural Moisture Content

Natural moisture content determinations were performed on soil samples recovered from the borings in general accordance with ASTM D2216. The results are presented on Figures B-1 through B-5 in this appendix and on the boring logs in the column labeled "Lab Tests."

Grain Size Analyses

Grain size analyses were performed on representative soil samples obtained from the borings in accordance with ASTM D422 to provide an indication of their grain size distribution. The results of the sieve analyses are presented on Figures B-1 through B-6 in this appendix. Samples on which sieve analyses were completed are designated with a "GS" in the column labeled "Lab Tests" on the summary logs.

Atterberg Limit Determinations

Atterberg Limit determinations were performed on representative soil samples obtained from the borings in general accordance with ASTM D4318 to determine the liquid limit (LL), plastic limit (PL), and plasticity index (PI). The results of the Atterberg Limit determinations are presented on Figures B-1 through B-5 and B-7 in this appendix. Samples on which Atterberg Limit determinations were completed are designated by "AL" in the column labeled "Lab Tests" on the summary logs.

PH-3-6A-00 SR-395 h	105	Job No.	XL-0715	5		Date	March 16, 2001	2001						
Part Part	웃	le No.	PH-3-6,	A-00		Sheel	-		Laboratory Summary	D Wa	shingto	on State	nsporta	tion
14 14 14 14 14 14 14 14	٢	oject	SR-395	- 1										
13.2 24 14.3 24.4 25		Depth (#)	Depth (m)	Sample No.			Color		Description		%CM	7	٦	ā
11.2 11.34 D-7 ML See Bortog Log See Bortog L	•	32.2	9.81	9-Q	ML	See	Boring Log		SILT with SAND		33	₽	£	ᇫ
13.0 13.0	B	37.2	11.34	2-a	ML	See	Boring Log		SANDY SILT		29	36	25	=
56.8 15.46 D-10 ML See Borng Log Sin Months Sin Month Sin Months Sin Months Sin Months Sin Months Sin Month Sin Months Sin Months Sin Months Sin Months Sin Month Sin Months Sin Months Sin Months Sin Months Sin Month Sin Months Sin	4	45.0	13.72	6-Q	ည္ဗ	See	Boring Log		CLAYEY GRAVEL with SAND		8	99	22	1
See 17.01 D-11 ML See Boring Log See Numbers Hydrometer Analysis See Numbers See Numbers Hydrometer Analysis See Numbers See See Numbers See	*	50.8	15.48	D-10	ML	Sea	Boring Log		SILT with GRAVEL		8	36	78	∞
Sile Act	0	55.8	17.01	D-11	ML	See	Boring Log		GRAVELLY SILT		9	2	Š.	a.
Struct Flow Process Structure Struct		2	Y CIL		Ç	S S N	Sieve Opening In Ir	ches	US Sieve Numbers	Hydromete	r Analy	sis		
15.9 34.5 53.3 15.0 14.4 54.1 15.0 10 10 10 10 10 10 10	-	, 1 1 1		TRAC IO	 2 Z	100		ž*	#40			-		Г
2.2 3.4.5 63.3 Separate Separ		%Gravel	%Sand	-	_		*							т
2.2 34.5 65.3 16.9 44.1 175.0 17	•	6.0	26.7	72.4			*							
15.9 16.5 14.4 15.0		2.2	34.5	63.3		3 1			/*************************************		<u> </u>			
15.9 9.1 75.0 9.5 9.1 75.0 9.5 9.1 75.0 9.5 9.1 75.0 9.5 9.1 9.1	4	39.0	16.9	44.1										
31.6 14.4 54.1	*	15.9	9.1	75.0					7			-	_	_
GRADATION VALUES	0	31.6	14.4	54.1					, /			1	-	
DEO D50 D20 D10 D20		GRA	DATIO	N VALUE	W				*					
2.61 0.18 0.18 5 4 3 2 0.18 5 4 3 2 0.018 5		D60		-	D10	;								
2.61 0.18 0.18 5 4 3 2 0.18 5 4 3 2 0.018 5	•	.*				2								ı -
2.61 0.18 0.18 5 4 3 2 1 8 5 4 3 2 0.018 5 4 3 2 2 0.018 5 4 3 2 0.018 5	B					5							_	
Grain Size In Millimeter O.17 Gravel Coarse Medium Fine	4	2.61	0.18			0	5 4 3	8 5 4	1 8 5 4 3 2 0.18 5	3				ا ا
0.17 Sand Sand Coarse Medium Fine	*								Grain Size In Millimeter					
0.17 Coarse Medium Fine	1		+						Sand		3			Г
	5	0.17					SABIO .		Medium	SIIT AIN	Clay			

ြိ	Job No.	XL-0715	ıa		a tec	March 16	2004							
3					Cald				(, to this of	0,000		
ĭ č	Hole No. Project	PH3-6B-00 SR-395	3-00		Sheet	o t		Laborator	Laboratory Summary		epartme	on State of Tra	Department of Transportation	ioi
	5	Depth (m)	Sample No.	nscs		Color		Des	Description		WC%	크	띡	ā
•	15.0	4.57	U~1	ML	See	See Boring Log		SANI	SANDY SILT		33	34	27	,
B	26.9	8.20	U-2	ರ	See I	See Boring Log		LEAI	LEAN CLAY		¥	64	25	15
4	35.0	10.67	D-7	MH	See I	See Boring Log		ELAS	ELASTIC SILT		04	52	36	16
*	42.2	12.86	D-8	MIL	See [See Boring Log			SILT			ď	ā.	₽ ₽
	6	C		9	S SN	US Sieve Opening In Inches	ches	US Sieve Numbers	ers	Hydrometer Analysis	ter Analy	sis		
	GRAU		GRADA LION FRACTIONS	 2	100	3/4"	五 鄉	#10 #2	#40 #200					_
	%Gravel	%Sand	%Fines Cc	on or	06									
•	0.2	43.8	56.0		C				/					
B	0.0	11.2	88.8		3				/					
∢.	0.0	3.4	9.96		thgi:				7					_
*	0.0	0.7	99.3		eW ve				•			+		
					1 neri ⁻									
	GRAI	DATIO	GRADATION VALUES	w)	Percent I									
	D90	D50 [D30 D20	D10										
•	60.0				3							<u> </u>		_
H					0							+		
4					0	5 4 3 2	10 8 5 4 3	2 8 7	4 3 2 0.18	5 4 3 2 0.018	18 5	4 3	2 0	٦ <u>٥</u>
*			=					Grain S	Grain Size In Millimeter					
						2		Sand		į	:			_
	-	-				Ciava	Coarse	Medium	Fine	Silt an	Silt and Clay			
		1				•								

*Sample number changed to match boring log.

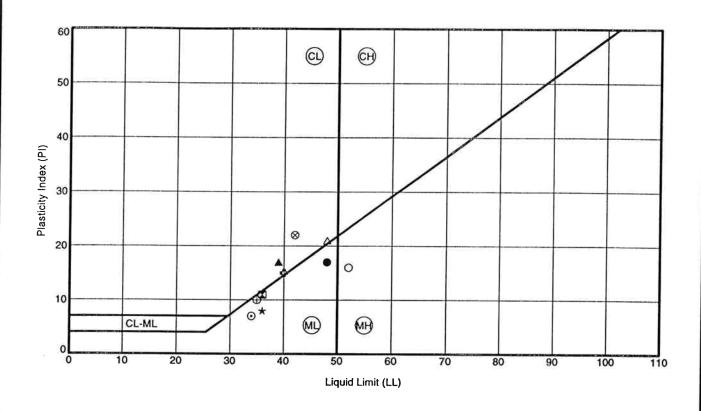
Sieve Opening In Inches Sieve Opening Inches Sieve	Date March 1	ch 16, 2001			
110.0 33.53 C.25 ML See Boring Log	-	Laboratory Summary Department of Transportation	hington State	nsportal	tion
110.0 33.53 (r.um. 2.2) ML See Boring Log	nscs		MC% LL	٦	₫
GRADATION FRACTIONS 3. 34" 100	ML		21 NP	ď	N.
GRADATION FRACTIONS 100					
CRADATION FRACTIONS 100					
GRADATION VALUES Decreated % Fines Co Cu Solution PRACTIONS On 7.7 92.3 Solution By Weight GRADATION VALUES Decreated the property of th			Analysis		
%Gravel %Sand %Fines Cc Cu 0.0 7.7 92.3 80 80 0.0 7.7 92.3 80 80 CRADATION VALUES 80 80 80 80 Descreent Finer By Weight 40 80 80 80 Descreent Finer By Weight 40 80 80 80 80 Descreent Finer By Weight 40 80 80 80 80 80 Descreent Finer By Weight 80 80 80 80 80 80 Descreent Finer By Weight 80	1000	#4 #10			r
GRADATION VALUES Percent Finer By Weight D60 D50 D30 D20 D10 20 20 20 D10 20 20 D10 20 20 D10 20 20 D10 20 20 D10 20 20 D10 2	3	7			
GRADATION VALUES Percent Finer By Weight D60 D50 D30 D20 D10 Percent Finer By Weight O60 D50 D30 D20 D10 O60 D50 D30 D20 D10 O60 D50 D30 D20 D10 O60 D50 D30 D30 D30 D30 O60 D50 D30 D30 D30 D30 D30 D30 D30 D30 D30 D3	G.				
GRADATION VALUES Percent Finer By Weight 20 20 20 20 20 20 20 20 20 20 20 20 20	20				
GRADATION VALUES Decrent Finer By We so that the state of the state o					
GRADATION VALUES D60 D50 D30 D20 D10 20				-	
GRADATION VALUES D60 D50 D30 D20 D10 20 10 10 10 10 10 10 10 10 10 10 10 10 10					
D60 D50 D20 D10 20 20 10 10 10 10 10 10 10 10 10 10 10 10 10	Percent			_	
10 10 5 4 3 2 10 6 5 4 3 2 10 Gravel	D10				
5 4 3 2 10 8 5 4 3 2 1	ς,				т
5.4 3 2 10 8 5 4 3 2 1	2				
	5 4 3	8 5 4 3 2 1 8 5 4 3	5 4 3	2 0	0.001
Sand		Grain Size In Millimeter			
-	200	Sand	lovi		r –
Medium		Coarse Medium Fine Silt and Ciay	clay		_

1967 PH3-5-00 Sheet 1 of 1 1 1 1 1 1 1 1 1 1	N dol	XI -0715	15			7000				
1964 1987	Hole No		2 2				Washingto	n State		
Destribution Description	Project		2		5 -	Laboratory Surmitary	Department Department	at of Tra	ınsporta	ation
19.67 19.67 19.74 19.75 19.7	Dept (ft)				Color	Description	WC%	크	చ	ā
SRADATION FRACTIONS Wishers Course Wishers Course Wishers Course Wishers Course Wishers Course Wishers Course				ML	See Boring Log	SILT	88	48	33	17
GRADATION FRACTIONS 3.0 8.5 88.5 88.5										
CRADATION FRACTIONS Sieve Opening in Inches Sieve Opening in Inches Sieve Opening in Inches Sieve Numbers Sieve Numbers Sieve Opening in Inches Sieve Opening in Inches Sieve Numbers Siev										
Sieve Opening In Inches U.S. Sieve Opening In Inches U.S. Sieve Opening In Inches U.S. Sieve Opening In Inches U.S. Sieve Opening In Inches U.S. Sieve Opening In Inches U.S. Sieve Opening In Inches U.S. Sieve Opening In Inches U.S. Sieve Opening In Inches U.S. Sieve Opening In Inches U.S. Sieve Opening In Inches U.S. Sieve Opening In Inches U.S. Sieve Opening Inches										
Strand S					US Sieve Opening In In		Hydrometer Analys	. <u>s</u>		
NGrave NSand NFines Co Cu See	GRA GRA	DATION	V FRACTIO	SZ SZ	3" 3/4"	#4 #10 #40	•			
3.0 8.5 88.5 Section 1.5 S	%Grav		%Fines		S					
GRADATION VALUES Dec DSO DSO DSO DSO DSO DSO DSO DSO DSO DSO		8.5	88.5							Ι
GRADATION VALUES Decreant Finer By Weight										1
GRADATION VALUES DEG DSG DSG DSG D10 DGG DSG DSG DSG D10 DGG DSG DSG DSG D10 DGG DSG DSG DSG D10 DGG DSG DSG DSG D10 DGG DSG DSG DSG DSG DSG DSG DSG DSG DSG										
GRADATION VALUES								1		
GRADATION VALUES										
Dec Dec	G	SADATIC	ON VALUES	· ·						
10 5 4 3 2 10 8 5 4 3 2 0.18 5 4 3 2 0.018 5 4 3 2 Shitand Clay Shitand C	D90			D10	99					
Sand State	•				200					т
Sand Sit and Clay					10					
Grain Size In Millimeter Sand Coarse Medium Fine					5 4 3	8 5 4 3 2 1 8 5 4 3 2 0,18 5 4	0.018 5			J.S.
Sand Sand Fine						Grain Size In Millimeter				
Coarse Medium Fine					0					
					Graver	Coarse Medium	Silt and Clay			

*Sample number changed to match boring log.

GRAIN SIZE FIGURE INPROJECT/244/006/WSDOTPH3.GPJ WSDOT.GDT 5/23/01-11:28:15 A5





ATTERBERG LIMIT TEST RESULTS

Symbol	Exploration Number	Sample Number		Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Natural Moisture (%)	Soil Description	Unified Soil Classification
•	PH3-5-00	D-7	35.0	48	31	17	58	SILT	ML
×	PH3-6A-00	D-7	37.2	36	25	11	29	Sandy SILT	ML
A	PH3-6A-00	D-9	45.0	39	22	17	18	Clayey GRAVEL with sand	GC
*	PH3-6A-00	D-10	50.8	36	28	8	30	SILT with gravel	ML
0	PH3-6B-00	U1	15.0	34	27	7	33	Sandy SILT	ML
٥	PH3-6B-00	U2	25.6	40	25	15	34	Lean CLAY	CL
0	PH3-6B-00	D-7	35.0	52	36	16	40	Elastic SILT	ML
Δ	PH3-8A-00	RUN 22	111.0	48	27	21	39	Lean CLAY	CL
⊗	PH3-8B-00	RUN 33	163.8	42	20	22	28	Sandy Lean CLAY	CL
Ф	PH3-9-00	RUN 17	102.0	35	25	10	30	SILT	ML

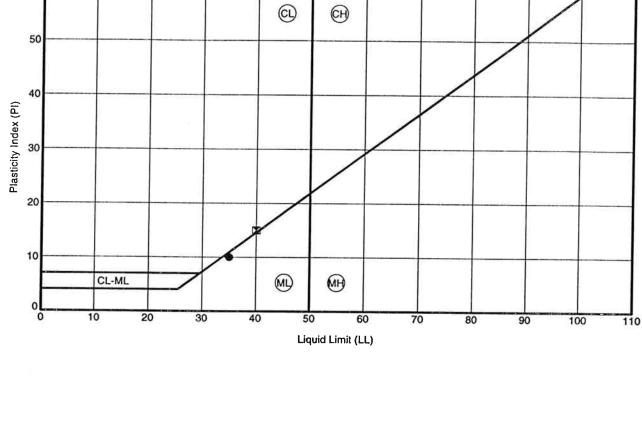
ASTM D 4318 Test Method



SR395 North Spokane Corridor Project Spokane, Washington

Plasticity Chart

Figure B-7

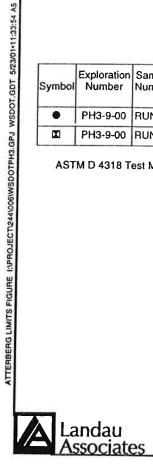


ATTERBERG LIMIT TEST RESULTS

Symbol	Exploration Number	Sample Number			Plastic Limit (%)		Natural Moisture (%)	Soil Description	Unified Soil Classification
•	PH3-9-00	RUN 18	107.0	35	25	10	33	Silt with Sand	ML
	PH3-9-00	RUN 29	163.8	40	25	15	26	Lean CLAY with sand	CL.

ASTM D 4318 Test Method

60



SR395 North Spokane Corridor Project Spokane, Washington

Plasticity Chart

Figure